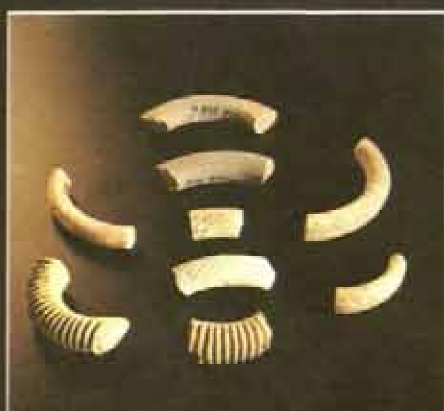
Indian Archaeology

1996-97 A Review






INDIAN ARCHAEOLOGY 1996-97
-A REVIEW

प्रत्नकीर्तिमपावृणु

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PREFACE

I am happy to place before you this issue of the IAR in a new format which I hope you will appreciate. Updating the issues of the IAR is an uphill task, however we are trying to bring out atleast 4 issues during this year if possible.

I need not perhaps emphasize that in this task the co-operation from not only my colleagues in the Survey but from all the State Governments, Universities and Research Institutions, is essential. I therefore, request you to adhere to the time schedule for submission of articles.

As in previous issues, the material incorporated herein is the outcome of the results of the various archaeological activities conducted by the different offices of the Survey, State Governments, Universities, Research Institutions and Museums. To each one of them I express my thanks. In handling this vast material some inaccuracies may have crept in for which I must apologize. However, for any inaccuracy in the data or in its interpretation, the responsibility lies with the contributors.

I record my deep appreciation for the efforts made by all the members of the Publications Section of the Survey in helping to bring out the IAR in time, particularly to Dr (Miss) A. Banerji for reducing the backlog in the publication of the IAR, and virtually making the impossible, possible. Dr B. R. Mani (Superintending Archaeologist, Publication) owes my special thanks for his invaluable suggestions at various stages.

For sorting out the material, editing and making the matter press ready I am beholden to the following officers of the Publication Section: Dr P. K. Trivedi, (Superintending Archaeologist, Publication) now posted in the Excavation Branch IV, Bhubaneswar; Dr B. R. Mani (Superintending Archaeologist, Publication); Dr (Miss) Arundhati Banerji (Dy. Superintending Archaeologist, Publication) as also to Shri Hoshiar Singh (Production Officer, Publication); Mrs. Anju Dhawan and Dr Piyush Bhatt (Assistant Archaeologists, Publication) and all the other members of the Publication Section for their help in diverse ways. For improvement in the line drawings incorporated therein, I would like to thanks Shri Vijay Kumar (Chief Artist), Shri Puran Chand Mukhiya (Marksman) and Shri Daddan Prasad (Marksman) of the Drawing Section.

The design, layout and typesetting have been done by Mr. Abhishek Biswas and Mr. Bharat Bhushan Upadhyay for which their entire team deserve to be congratulated. And finally, last but not least to Mr. Anil Kochar of the Public Printing (Delhi) Service, I express my thanks for bringing out this issue within a very short period.

(KASTURI GUPTA MENON)
DIRECTOR GENERAL

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INDIAN ARCHAEOLOGY 1996-97-A REVIEW

1. EXPLORATIONS AND EXCAVATION

ANDHRA PRADESH

1. EXCAVATION AT NELAKONDAPALLI, DISTRICT KHAMMAM

In continuation of the previous season's work (*Indian Archaeology 1993-94—A Review,* p.3) , excavations conducted by the Directorate of Archaeology and Museums, Government of Andhra Pradesh, brought to light an assembly hall along with a row of cells during this season. Antiquities like beads, bangle pieces of ivory, glass and shell were also found associated.

2. EXPLORATION IN DISTRICT KURNOOL

Ismail Kellellu of the Department of Ancient Indian History, Culture and Archaeology, Nagpur University, Nagpur, resumed explorations in Yemmiganur tehsil and located an extensive site about 2.5 km west of the village Kanakavidu (51 ° 51' N; 77° 33' E) which is located at a distance of 8 km south of Nagaladinne, known for its Stone Age cultures explored by Robert Bruce Foote.

This is a 15 acre cultivated land with an elevation of about 3 m, landmarked by a few big granite boulders locally known as Agri (Agni?) Devara Gundlu, meaning 'the boulders of God Agni or Agri'. The surface finds comprise pottery *viz.,* big jars, basins, dishes, bowls, vases in typical south Indian Neolithic fabric and types in red ware and grey ware; all the above types in red ware, black ware, black-and-red ware of early historical period; a Neolithic celt in dolerite; a few shell bangles; animal bones and carnelian beads. Probably the site was occupied from the Neolithic to the early historical times.

3. EXCAVATION AT KOTHAPATNAM, DISTRICT NELLORE

Excavations conducted by the Directorate of Archaeology and Museums, Government of Andhra Pradesh, brought to light a series of granaries, China ware, Rouletted ware, Celadon ware, besides stone beads and bangle pieces, etc. This place served as a seaport and signifies maritime trade with China.

[1] This publication is referred to in the following pages by the year only.

4. Excavation at Pavurallakonda, District Vishakhapatnam

Excavations conducted by the Directorate of Archaeology and Museums, Government of Andhra Pradesh, brought to light three viharas ascribable to Satavahana epoch having spacious verandahs, circular *chaitya-griha,* votive stupas and a hall along with Roman coins and inscribed potsherds datable to *circa* third-second century BC.

ARUNACHAL PRADESH

5. Excavation at Gomsi Rani, District East Siang

The ancient site of Gomsi is located 15 km south-west of district headquarters of Pasighat and 19 km inside from Murkeng Selek Railway Station on Assam-Arunachal border.

The site is spread in an area of 11.5 acres of land. The Directorate of Research, Government of Arunachal Pradesh, Itanagar, has completed the first phase of excavation at the site.

The trial-digging at the main mound and at extreme northwestern corner of the site exposed a portion of brick wall and a house structure. The brick mound measuring 21 m x 17 m is rectangular in shape. The exhumation revealed ten brick courses to the northwestern corner of the wall, which were exposed from the base level upto the floor level. Above the floor level, the dwellers seem to have erected super-structure of perishable material. About thirteen bricks in different sizes and shapes were used for the construction of the house.

The site represents a large brick mound with L-shaped large earthen mound measuring (23 m x 23 m x 24 m) about 3 m south of it and a rectangular pond measuring 38 m x 28 m about 60 m south of the mound. These are surrounded by *nala* measuring 3.5 m wide from all coiners and both ends meeting in the pond. The *nala* served a dual purpose of a moat and a source of water supply. A number of small earthen mounds measuring about 14 m x 10 m are also situated in the vicinity at regular intervals. Different types of pottery including a few pieces of stone urn, black painted pottery, decorated with criss-cross pattern and a piece of flower vase have been picked up, besides one spear-head made of iron from 15 cm below surface level.

From the typological analysis of the findings it may be surmised that the site was inhabited by the people of early medieval period (probably pre-Ahom).

6. Excavation at Daporijo, District Upper Subansiri

In continuation of the previous work (*1994-95,* p. 3), the Directorate of Research, Government of Arunachal Pradesh, Itanagar, conducted further investigations in and around Daporijo, the district headquarter. The area embraces the great Himalayas in the north, the lower Subansiri district towards the west and is delimited by rolling grassland of District West Siang in the east and south.

Daporijo is dominated by the people ofTani group. The Tagins constitute a great part of the district population The Gallongs and the Hill Miris also form substantial parts of the population of that area. The Tagins are believed to have migrated from Tibet. But they have no clear memory of the exact place of migration. On the other hand almost all the scholars are of the opinion that the Tani group inhabited this place from time immemorial. The main aim of the excavation was to ascertain the existence of Neolithic culture in the area, after having found few artefacts on the surface.

The investigations have been done thoroughly around 20 sq km including Daporijo proper; Nima village; Delam village; Sikarije area; Lige and Old Lige area; Manga area and Dan area. In this connection fifteen trial-trenches of 2 m x 2 m were dug to ascertain the chronological set up of the Neolithic culture. The depth of trial-trenches ranged between 35 cm to 40 cm and the artefacts were found in layer 2.

Out of the total eleven Neolithic tools found, almost all were highly weathered and made of soft clay stone. Typologically, these tools belong to the Neolithic axe group. The implements found in and around Daporijo are not similar to the tools found at Parsi-Parlo of Kamla valley, reported during 1980-82. The raw material of the stone artefacts found at the two sites are different. The cultural deposit of Daporijo included only one layer (layer 2) but in Parsi-Parlo stone artefacts were found in three different layers (layers 2 and 3). Geographically, both the sites belong to almost the same late Siwalik deposition.

It is evident from the Neolithic celt found from Daporijo area that present culture shows the continuity right from Neolithic times. In view of the above data it is difficult to work out the nature of original inhabitants who occupied the area at this stage.

ASSAM

7. Exploration in Doiyang-Dhansiri Valley, District Borpathar

H.N. Dutta of the Department of Archaeology, Government of Assam, Guwahati, conducted explorations in some parts of the Doiyang-Dhansiri valley.

At Duboroni in Borpathar, remains of a habitational site were located by the side of the Borpathar-Golaghat Road, under thick forest cover. Evidence of ditches, brick-reinforced ramparts, one of which measures 11 m high and 21 m wide near Duboroni L.P. School, four brick mounds containing structural ruins and ten stone sculptures one of which is a stone *sankha* and, a number of *Siva-lingas* belonging to *circa* eighth century AD were found at the site. The site covers an area of about 4 sq km and is situated close to the River Dhansiri, a southern tributary of the Brahmaputra to which it was possibly connected. Partial exploration conducted during this year leads to suggest that Duboroni was a brick-built site fortified by ditches and reinforced ramparts.

Apart from a Manusa-*linga*, four *Siva-lingas* and ten stone images were noticed at Duboroni in Borpathar. These sculptures include a standing devotee with folded hands, couchant *nandi* and a *sankha* carved out of a stone-block. Besides these, five *chaturbhuja* figures of Vishnu in *samapada-sthanaka* posture carved in a high relief, were found at the Duboroni Siva Temple. The *ayudhas* in hand, dress and ornaments and other iconographical features were neatly depicted on these figures. These images are adorned with ornamented *kirita-mukutas* round in shape, and flattened on top. Some of these figures are squat and slightly pot-bellied.

All these five figures of Vishnu carry *sankha, chakra, gada* and *padma;* the first three examples represent Madhusudana, Padmanabha and Vishnu while the last two appear to be the Purushottama forms.

A composite figure of *Ardhanarisvara* was found at Duboroni in a mutilated state. A figure of Siva (50 cm x 24 cm) seated in *maharaja-lilasana* (pl. I A) in high relief, was reported from Borpathar, close to Duboroni. It holds a *damaru* in the left hand and a lotus in the right hand, the latter depicted in *varada-mudra,* resting on the right knee. The figure is adorned with a braided *jata-mukuta* flanked by a

Plate I



A



B



C



D

A-B, *Duboroni, Borpathar : images of Siva and Vishnu;* C-D, *Rajapukhuri, Sarupathar : Vishnu and Harihara*

blooming lotus on either side. The tuft of the matted hairlock flows down to its shoulder. The elongated ears are seen with *kundalas.* Its facial expression is calm and pleasant and reflects meditative insight. Stylistically, the image, like all other icons described above, is datable to AD 800.

The *chaturbhuja* figure of Vishnu from Borpathar carries an *akshamala* in its upper right hand, the other *ayudhas* are *sankha, gada* and *chakra* (pl. IB). Presence of *akshamala* in this figure seems to indicate the development of certain syncretistic belief in this region. Stylistically, the figure of Vishnu is akin to other images of the deity described above and belongs to the same period. There were evidence of two tanks at Duboroni, of which one measures 85 m x 85 m while the other tank which is under forest cover, has lost its features.

8. Exploration in District Golaghat

The Department of Archaeology, Government of Assam, Guwahati, conducted explorations at Telisal in Kasomaripathar, located at a distance of about 20 km from Merapani in District Golaghat. The site is situated near the dead stream of River Doiyang.

The *chaturbhuja* Devi image carved in high relief on a stela with a rounded top, and standing in *samapada-sthanaka* has been found from the site. The image has a tall physiognomy with fully developed breasts and a long drapery down to the ankles. Behind the mutilated face a serpentine carve, possibly depicting *a pasa,* is seen. The upper right hand holds a *trisula* and the upper left a *darpana.* The lower hands of the icon are mutilated. The figure is flanked by flying *gandharvas* at its top and figures of Ganesa and Karttikeya in the middle. On stylistic consideration the figure is datable to the last quarter of ninth century.

The exploration also led to the discovery of a brick-mound with ruins of stone relics. A mutilated *chaturbhuja* Saivite figure on a stela with a rounded top, fragments of *a yoni-pitha* and a door-lintel (1.69 cm x 50 cm x 33 cm) have been traced at this site amidst brick remains. The door-lintel bears late Gupta features in its carving. A brick-built Saiva temple datable to *circa* AD 900 existed at this site wherein the above mentioned sculptures were possibly enshrined. A large tank known as Vishnupukhuri (440 m x 220 m), exists near the temple site at Telisal.

The names of the ancient sites have been derived from the two water tanks known as Rajapukhuri (220 m x 102 m) and Ranipukhuri (75 m x 55 m), that exist at the site. The site is located at a distance of about 20 kms from Sarupathar in District Golaghat.

At Ahomgaon in Rajapukhuri another tank was found with its bank eroded, measuring 28m x 27m in north-south axis. A brick-mound measuring 42 m wide exists at the site. Two figures of *chaturbhuja* Vishnu (44 cm x 12 cm) and (42 cm x 22 cm) respectively (pl. IC), Lakshmi, Harihara seated in *padmasana* in *dhyana-mudra* (pl. ID) and an *ekamukha-linga* have been found enshrined in the village prayer hall at Ahomgaon. The figures are stylistically akin to the Duboroni group of sculptures.

BIHAR

9. Excavation at Kolhua, District Muzaffarpur

In continuation of the earlier work (*1993-94,* pp. 9-10), Lai Chand Singh of the Patna Circle of the Archaeological Survey of India, assisted by K.C. Srivastava, Manoj Dwivedi, A.K. Gupta, S.K. Arora, P.K. Tripathi and Avinash Kumar, carried out excavation at the site towards north and west of the Markat Hrid tank. Votive stupas

[1] Referred to as the Survey in the following pages.

more than eighty in number including composite stupas having circular or square plan and attractive mouldings on elevation, have been exposed. A small square shrine having a drain towards north and opening towards east has also been exposed. All the structures have a common rammed floor made of brick-jelly, lime and *surkhi* with a slope towards the tank.

Beside red ware, miniature pots, terracotta balls and beads, decorative moulded-bricks, finials of votive stupas and other minor antiquities, one partly damaged sandstone image of Buddha in the standing posture, with a height of approximately 60 cm, is noteworthy.

10. EXCAVATION AT MANER, DISTRICT PATNA

The Department of Ancient Indian History and Archaeology, Patna University, Patna, in continuation of the previous work (*1995-96,* p.5), resumed excavation at Maner. The work was conducted by A.K. Singh under the general direction of B.P. Roy, with the assistance of N.K.. Arya and P.K. Bose.

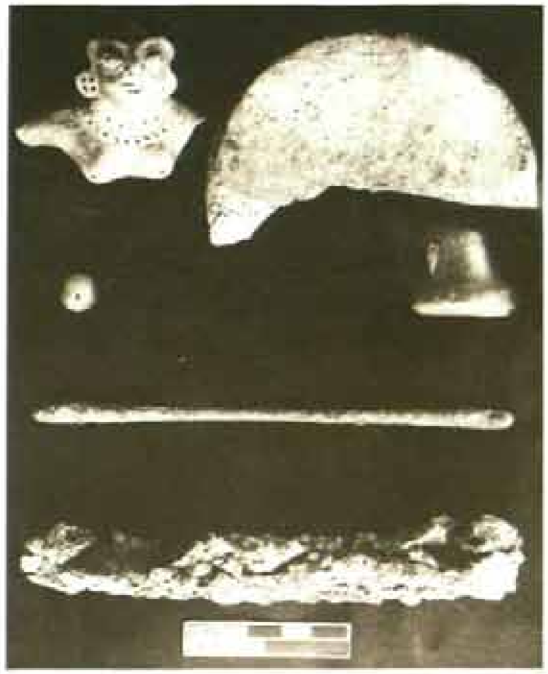
The main objective of this year's excavation was to ascertain the cultural sequence of the middle mound located just to the south of the high mound on the north, where earlier excavations (1989-90) revealed a five-fold cultural sequence, starting from the Neolithic, down to the Pala period. Keeping the above objective in view, two trenches, each measuring 6 m x 4 m, were laid on the western side of the mound overlooking the dry bed of River Son. The trenches laid out in the north-south orientation were christened as MNR-VIA and MNR-VIB.

The digging in this area unveiled four cultural periods as against the five noted in the earlier excavation.

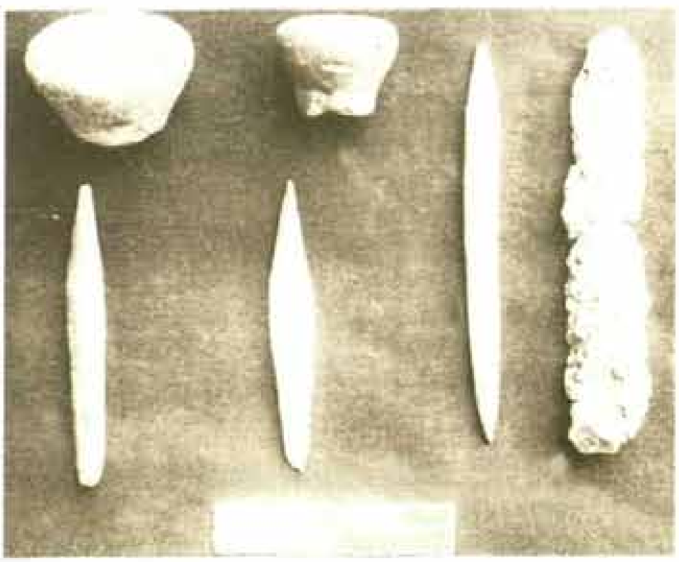
Period I belonging to the Chalcolithic black-and-red ware is represented by 1.80 m deposit, divisible into four layers ranging from layers 9 to 6 and rest over natural soil composed of compact yellowish soil. The pottery comprised mainly black-and-red ware, black ware and red ware. Interestingly enough the black-and-red ware includes some plain and finely slipped specimens. The notable types comprised lipped-bowl, stem of dish-on-stand in black-and-red ware, channel-spouted bowl in black-and-red ware, some dish-on-stand in black ware, perforated pots in red ware, small vase and small to medium-sized jars. The associated antiquities included microlithic tools comprising blade-let and flakes; stone and terracotta beads, stone balls, pestle; bone points, arrow-head and unpierced varieties of pottery discs, miniature terracotta crucible and iron slags. The evidence of iron slag and terracotta crucible from this period is suggestive of the late phase of Chalcolithic accumulation associated with iron.

Period II is represented by Northern Black Polished Ware (NBPW) deposit having a thickness of about 1.20 m and the entire deposit is divisible into three layers ranging from layers 5 to 3. The constructional activity of this period is evidenced by the remains of terracotta ring-well consisting of seven courses of rings and the diameter of the ring-well is around 0.75 m. The ring-well rests over layer 5 and is sealed by layer 4. The pottery obtained from the above layers include NBPW and its associated wares, in varying shades such as, black-slipped, black-and-red, grey and red wares. The antiquities (pls. IIA-B) comprise terracotta female figurine, beads, wheel, disc and circular bone object, iron objects such as, spears and nails, stone objects such as stone balls and beads, terracotta conical objects and copper antimony rods.

Plate II



A



B



C

Maner : A - B, *miscellaneous antiquities, Period II and III;* C, *terracotta objects, Period III*

Period III is represented by a small brick wall of Gupta phase consisting of four courses of bricks. The exposed wall running from east to west in the section facing east, measures 1.40 m in length. The pottery from this layer includes plain and polished red ware sherds and associated antiquities (pl. IIC) comprise terracotta human figurine, pendant, a sealing bearing Gupta Brahmi letters, pestle, stone weight, iron objects, chessmen and ivory dice. Curiously enough a pit cut into layers 3 and 4 sealed by layer 2 has yielded a single specimen of Neolithic stone celt.

Period IV is marked by a structural-complex consisting of a room-like formation showing three walls, a brick drain and a brick-built well belonging to the medieval period. The brick well consists of twenty-five courses and its diameter is around 0.75 m. The brick drains run from north to south and measure 0.55 m in length and 0.20 m in width. The bricks used in the well and drains measure 30.8 cm. The structural-complex was found at the depth of 0.50 m from the surface, sealed by layer 1. The layer 1 in question, yielded, in addition to the mixed material of different kinds, a good number of green glazed sherds of early medieval period.

11. EXCAVATION AT RAMCHAURA, HAZIPUR, DISTRICT VAISHALI

In continuation of the previous year's work (*1995-96,* p.6), K.P. Jayaswal Research Institute, Patna, resumed excavation at Ramchaura under C.P. Sinha, Jagdishwar Pandey, Bijoy Kumar Chaudhary and Anil Kumar assisted by Vijay Kumar, Ratan Kumar, S.N. Jha and B.K. Jha.

The main objective of this year's excavation was to ascertain further the cultural sequence in the area close to the Ramchaura Temple located towards the eastern side of the excavated trench (RCH-2). One trench (RCH-3) measuring 10 m x 6 m was laid just to the north of the Ramchaura Temple.

About 6 m thick habitational deposit was found to be divisible into five cultural periods as against the two noted in the previous excavation.

Period I is represented by the Chalcolithic deposit having an average thickness of lm. This deposit is constituted by two layers (8) and (7) resting over natural soil, composed of red-yellowish compact clay. The lowermost layer (8) is composed of somewhat dark coloured clay with an average thickness of 0.48 m while layer (7) is of greyish brown colour having a thickness of 0.50 m. The ceramics recorded from these layers consist of red ware and black-and-red ware. The shapes in these wares include the dish, bowl, trough, spout, dish-on-stand, perforated pot and bowl. The black-and-red ware was ofboth coarse and fine variety. A broken stone-slab for grinding was also found.

Period II at the site belongs to the pre-NBPW phase and it is represented by layers (6A) and (6). The layer (6 A) is composed ofburnt clay lump with whitish ash having an average thickness of about 0.32m. The pottery obtained from this deposit included sherds of black-slipped ware, a few red ware and black-and-red ware. The fragments of black-slipped ware were found in huge quantity with shapes such as incurved plates and dishes, perforated bowl with stand, etc. The associated antiquities comprised arrow-heads, bone points and terracotta beads.

Layer (6) is composed ofbrownish soil with grey patches here and there with an average thickness of about 0.90 m. The pottery obtained from this layer also included black-slipped ware and red ware. The shapes in black-slipped ware included the bowl, incurved dishes, plates and cups while those found in red ware were the bowl, dish, vase, jar and trough

besides the antiquities which comprised terracotta beads, bone points, arrow-heads and iron objects.

Period III at the site is marked by the NBPW deposit having a thickness of about 0.90 m, represented by layer (5), which is composed of brown soil mixed with potsherds. The pottery obtained from this layer included NBPW of different hues besides its associated ware such as black-slipped ware, black-and-red ware and grey ware. The shapes included the dish, bowl, miniature pot along with a few dishes and bowls bearing designs. The antiquities belonging to this period included mainly terracotta objects such as wheels, stamps, beads, net sinkers, sealings, moulds, stoppers, human and animal figurines apart from bone objects such as point, stylus, tanged arrow-heads besides a few carnelian and semi-precious stone beads, stone pestle and some iron objects.

Period IV belongs to Kushan level and is represented mainly by layer (4), composed of yellowish brown soil. The pottery recovered from this layer included red ware *viz.,* finely slipped and polished varieties. The main types in these wares comprised bowls, dishes and at times painted with linear designs, *handi,* miniature bowls and pots, sprinklers in different colours, sizes and shapes, vase bearing designs and auspicious marks. The antiquities associated with this phase included terracotta human and animal figurines, wheels, balls, beads, stoppers and sealings; iron objects; bone bangles and *kauries. A* significant discovery of this phase is a *pucca* floor, made of *surkhi-lime* (2.40 m x 1.65 m x 0.16 m) and is connected with a brick drain. It was found at a depth of 3.35 m from the surface, sealed by layer (4). The drain was found at a depth of 3.35 m from the surface. This covered drain is connected with the floor. The drain 2.90 m in length and 0.23 m in breadth runs from west to east. The bricks used in the drains measure 35 cm x 22 cm x 5.5 cm.

Period V belongs to the Gupta period. It is represented by layer (3) which is composed of dull brown soil mixed with brickbats and its average thickness is about 0.70 m. The deposit yielded plain red ware including finely slipped specimens. The shapes includedjars, vases, trough, dishes and miniature pots. Amongst the antiquities, terracotta human and animal figurines, balls, stoppers and beads besides iron objects and stone pieces are worth mentioning. The most notable discovery of this period is a brick-built well unearthed at a depth of 2.18 m from the surface.

The brick-built well is characterized by two walls—inner and outer. The inner wall consists of ninety-five courses of bricks and measures 0.25 m in width while the outer wall consists of sixty-seven courses of bricks and measures 0.67 m in width. The bricks used in the construction of the outer wall measure 0.35 m x 0.24 m x 0.6 m while bricks used in the construction of the inner wall measure 0.31 - 0.35 m x 0.25m x0.6m.

GOA

12. Excavation at St. Augustine Church-Complex, District Old Goa

In continuation of the previous year's (*1995-96,* p.7) excavation, the Mini Circle Goa, of the Survey, took up the scientific clearance-cum excavation at St. Augustine church-complex at Old Goa, under the direction of Muhammed K.K., assisted by Manoj Kumar Saxena and Gopala Rao.

After the removal of thick vegetation, the southern half of the Sacristy was further excavated. It exposed one big hall measuring 15.95 m x 7.80 m x 4.00 m. During the excavation, two arches measuring

Plate III



Dholavira : reservoir to the south of castle, cut into the rock with patches of super masonry

3.20 m x 1.50 m x 0.62 m could be exposed. The key stone of the first arch was found in a broken state. The other was closed at a later stage by laterite blocks. This closure appears to have followed the banning of the religious orders including Augustinians, by the Portuguese Government in 1835. After the ban, Santa casa de Misericordia, a charitable institution was transferred to it and much of the additions and alterations had taken place during their occupation.

The excavation also exposed four windows, two each on eastern and western sides, top of both the windows have collapsed. Windows measure 3.10m x 2.20 m x 1.80 m. In the centre of the southern wall, an altar measuring 2.40 m x 1.42 m x 0.49 m was encountered.

A door leading to the inner chamber was also exposed on the south-west corner of the southern wall, measuring 2.05 m x 0.98 m x 2.00 m. Not far from it a niche (1.15 m x 0.60 m x 0.65 m) was encountered on the western wall at the south-west corner. In the corner of the same hall a depression (1.40 m x 1.05 m x 0.25 m) was also noticed. Important antiquities like Chinese pottery, iron clamp, Italian tiles, etc., were also collected during the clearance.

GUJARAT

13. Excavation at Dholavira, District Kachchh

The Institute of Archaeology of the Survey resumed excavation at Dholavira, which has been under way since 1989-90, under the direction of R.S. Bisht, assisted by Urmila Sant, D.N. Dimri, Y.S. Rawat, Balbir Singh, Ravinder Kumar, G.S. Rao, R.K. Dalai, V.H. Parmar, J.B. Makwana, L.S. Mamani, Ram Kumar, Naresh Kumar Kharb, Rajesh Manik and others. Besides imparting training to the students of the Institute and carrying out simultaneous conservation of important structures, the academic objectives were: to gather further details of planning and architecture and make deep probing at selected places in the north-south oriented trenches in all the principal divisions and subdivisions of the city such as Castle, Bailey, Middle Town, Lower Town, both the Stadiums, Annexe and in the open fields believed to be concealing reservoirs.

The results obtained have been highly rewarding. In the cultivated field running along to the south of Castle, an east-west oriented rockcut reservoir (pl. III) was brought to light, the first of its kind in the Harappan, for that matter, in any prehistoric context found so far. This reservoir that seems to be running parallel to the Castle wall is cut in a stepped fashion having three levels through the sandy limestone formation. The bottom of the reservoir was struck at a depth of 8.36 m below the surface and 7.90 m below the ancient working level of Stage III when it was first excavated by the Harappans. In fact, the first step that was partly cut through the rock and partly built up in the gaps of the rock, was carved to obtain a landing terrace running along either side of the reservoir. In width, the northern landing measures about 4 m and the southern one about 2 m. The span of the reservoir at the ancient working level measures 15 m at the top while the depth of each terrace cut into the rock is about 0.65 m on the north and 0.45 m on the south. The width of the main reservoir, meant for holding the water, measures 8.90 m at the first level and gets reduced to 8.36 m at the depth that ranges from 3.43 m to 3.35 m due to the mild taper on both of its faces. Then starts the lowermost segment of the reservoir, which is 5.65 m broad and 2 m deep on the north side and 1.40 m on the south respectively. Significantly, it was excavated obliquely

Plate IV



A



B

Dholavira : A, south-western quadrangle of citadel with water structure; B, close up of the well provided with a trough bearing rope marks on the basal slab

at an angle of 14° on both sides from the main line of the reservoir. Only further excavation can provide an answer to this aberration. Stratigraphically speaking, much of the reservoir seems to have been filled up with the water-borne sediments perhaps during Stage V or soon after.

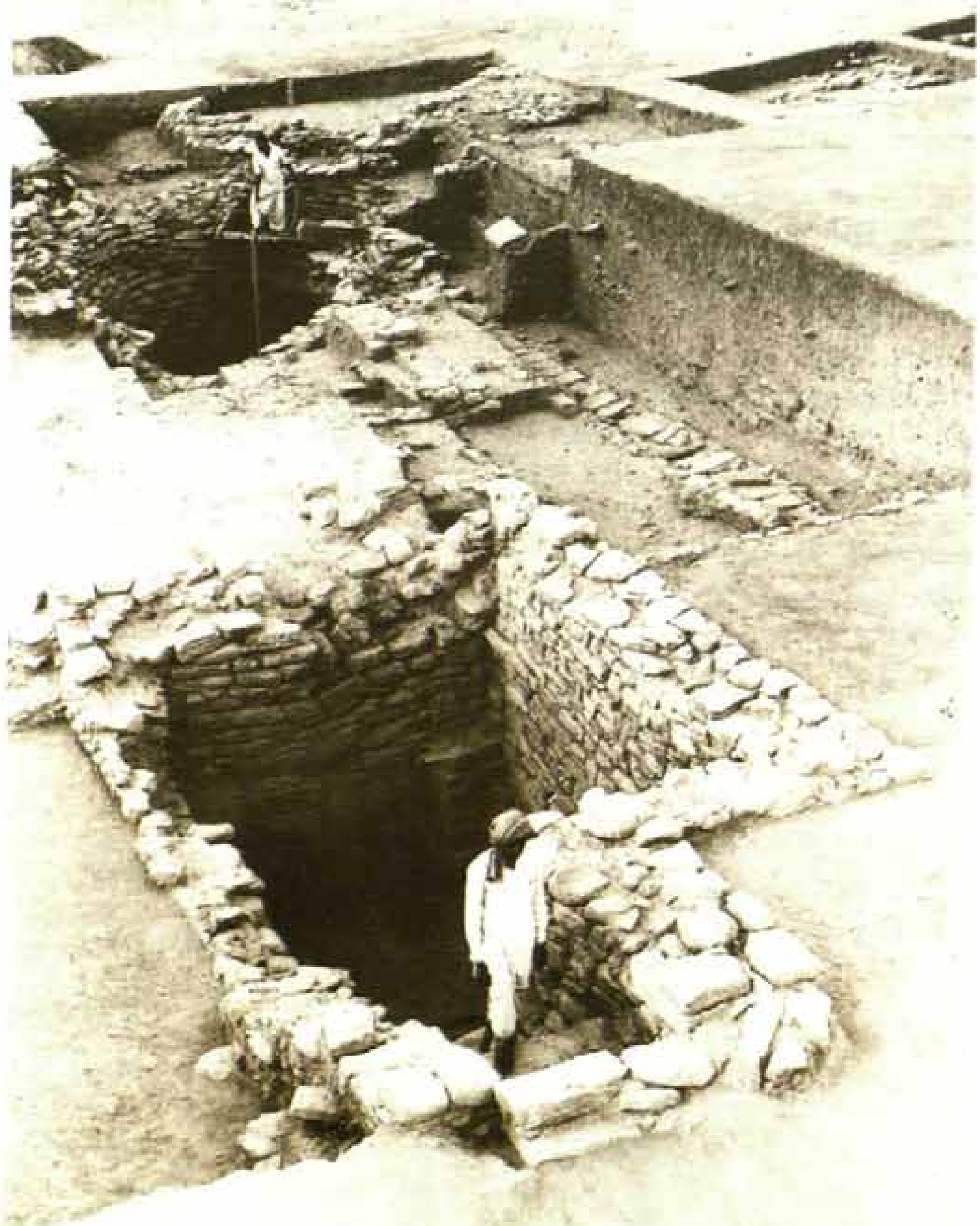
However, there was still a depression when the site was reoccupied in Stage VI during which it seems to have got fully silted up. While excavating further north, it was noted that a flight of steps, going back in point of time to Stage III, descended from a narrow gate opening to the landing of the reservoir. That gate is connected to a subterranean passageway pierced through the thickness of the defensive wall of Castle. The gate seems to have been filled in and blocked sometime during Stage V. During the period of neglect, the steps got eroded besides being fully or partially robbed of the stones. This unpretentious gate was perhaps a Watergate for the occupants of the royal household.

The weaker strata of the geological formation in the reservoir were sealed with superb stone masonry. Each stone block was most expertly cut and neatly coursed with the mortar of an impervious clay. Rock faces were also thoroughly smoothened to make it less porous.

The south-western corner of Castle seems to have been reserved for water structures such as a large well, two water tanks, drains and some associated architectural features (pl. IV A). The well, perhaps the largest one found so far in the Harappan context, has its internal diametre of 4.45 m in the north-south direction and 4.15m along the east-west (pl. IV B). The distortion is due to the lateral thrust from the direction of the east and the west. The original diametre may have, therefore, been 4.25 m. On the south-western face of the well a high degree of skill is manifest, whereas on the other sides the gushing surface run-off during the period of desertion has caused such damage that the stones still *in situ* have been rounded off. The well has been evacuated to a depth of 13.60 m. For striking the water-table, about another ten metres of excavation may perhaps be necessary. On the available evidence, it is almost certain that the well was certainly in existence during Stage IV and had been used all through upto Stage VI. It is not unlikely that Stage VII people might have drawn water from it. Only full excavation can settle this issue as the stratigraphical context in the subsurface was found poorly preserved. So far the first introduction of the well is concerned, it can be ascertained by digging deep down the exterior of the shell of the well.

Significantly during the basal slab of the trough is found bearing rope marks. Besides, some slabs bearing deep rope marks due to their use for a longer period and thereby rendered unfit for further use have been found from the excavation as discards. It is also interesting to record that the debris of a collapsed structure on the eastern side of the well indicates that there stood a stone masonry column; on the opposite side was noticed another, although lesser, pile of stones. There is a strong possibility that there were two stone columns to support a horizontal wooden shaft, fitted with a pulley for lowering a leather bag into the well for drawing water and letting it flow into the stone trough which is provided on the south-eastern part of the shell of the well. It is made of three stoneslabs—one, for the base having an outward slant and the two placed vertically along the sides. Whereas the side towards the well is wide open, the opposite one is found blocked with a high stone masonry wall. The south-western vertical slab has a small aperture that is connected

Plate V



Dholavira : south-western quadrangle of citadel with water structure

to a covered drain that carried the water to the two nearby water tanks. The available evidence has strongly indicated that a large leather bag having two mouths, one wide and the other narrow, each fitted with a thicker and a thinner rope respectively, was used for drawing the water with the aid of the above-mentioned pulley, etc. A group of persons or a pair of animals must have been drafted for pulling the ropes for drawing water from the well.

From the well, the larger of the tanks lies 9 m to the north and the smaller one is 13.20 m to the north-east. Lying 4.70 m apart and parallel to each other, both are connected to Broadway through their respective staircases. The larger tank (pl.V) which has been exposed considerably during the previous two seasons of excavation was subjected to further investigation. Internally, it measures 4.65 m north-south, 3.15m east-west and 4.80 m deep. Four walls, each 70 cm wide, enclose the tank, albeit with a projecting staircase which measures 2.25 m north-south and 2.50 m east-west. In all, there are six steps having the span of 1 m, the tread of 40 to 50 cm and the rise of 20 to 40 cm. These steps have different phases of construction following the periodical rise in the levels of Broadway. Significantly, the stairs descend only halfway down and terminate 1.90 m above the floor of the tank. In the south-eastern corner, there is a spout projecting from the mouth of the drain that is connected to the well as stated above. The maximum extent may be the maximum original height of the partly damaged walls of the tank, 3.80 m. The lower margin all around is lined with 60 to70 cm wide and 1.20 to 1.30 m high limestone slabs joined together with a fine, sticky and impervious clay. Above it is the rubble masonry of poor workmanship, raised from time to time with the rise of the surrounding area.

In the centre of the tank, there is built a miniature tank with length, width and depth of 80 cm each. On the floor, there are deep use marks. Some of the steps too bear circular depressions, often caused due to the placing of water jars. It is not unlikely that the water tank was originally upto the top of the slab lining. It, however, remained in use till the end of Stage VI. Most significantly, this water tank was found associated with a symbolic evidence. A water jar, elegantly decorated with simple geometrical motifs in the Jhukar style, was found placed empty and upside down, with a stone lid on its mouth, near the top landing of the staircase of the tank. It was left there by the late Harappans at the time of deserting the town of Dholavira.

Now to the smaller tank (pl. VI): its internal measurements are: 2.20 m north-south, 2.30 m east-west, 4.85 m deep, and the staircase being 5.30 m long north-south and 2.45 m wide. The staircase has fourteen steps descending from north to south. Like that of the larger one, the span of the steps is one metre. Importantly, the stairs are far gentler and built much better with an average tread of 30 cm. For stepping into the tank, a cylindrical limestone block is found placed on the floor close to the last step of the stairway. It not only facilitated an easy descent but may have also been used as a seat by the user as this could have been a bathing tank. Anyway, it is interesting to note that the cylindrical block conceals an aperture which may be connected to a drain for flushing out the used water. The limestone slabs used for lining are smaller in height as well as width. However, the inlet channel showing usually a wide mouth, like that of the larger one, is in the south-western corner. Floor paving is also of superior workmanship. A circular block placed close to the lowermost step, in fact conceals a small aperture, which could be connected to a drain meant for flushing out dirty water at the

Plate VI



Dholavira : a stepped-tank, connected with a feeder channel issuing from the well

Plate VII



A



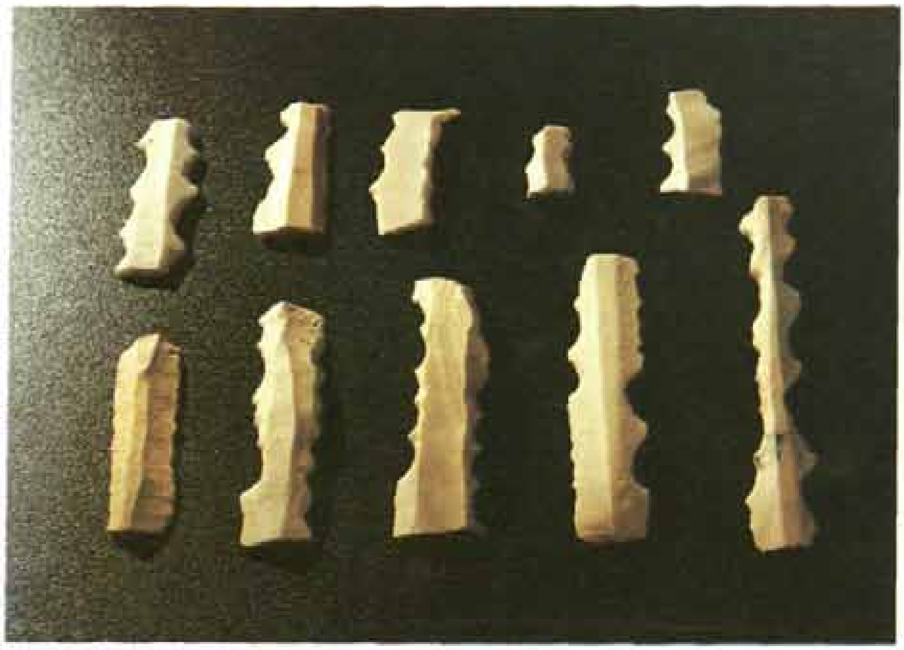
B



C

Dholavira : A, *monitor lizard or mongoose in sandstone, Lower Town;* B, *bangle fragments of stone-ware, paste and faience, Stage IV;* C, *copper mirror, Stage V*

Plate VIII



A



B

Dholavira : A, *denticulated and serrated blades of chert, StageV;*
B, *long ribbon chert blades*

time of periodical mopping of the tank. A similar hole was observed in the larger tank as well. In both the cases, there could be drains connected to the main drain that ran underground beneath the Broadway. Looking at both the tanks, it is certain that the larger one was for storage of water and the other could have been a bathing tank.

Further digging in this area may reveal a few more interesting features. Already, traces of some fireplaces perhaps used for heating water, have been noticed Besides, some small cubicle-like constructions, which once fitted with stone slabs, were seen in the area lying between the well and the tank. Those could be bathrooms.

The excavation also yielded a variety of antiquities (pls. VII-VIII).

14. Excavation at Bagasra, District Rajkot

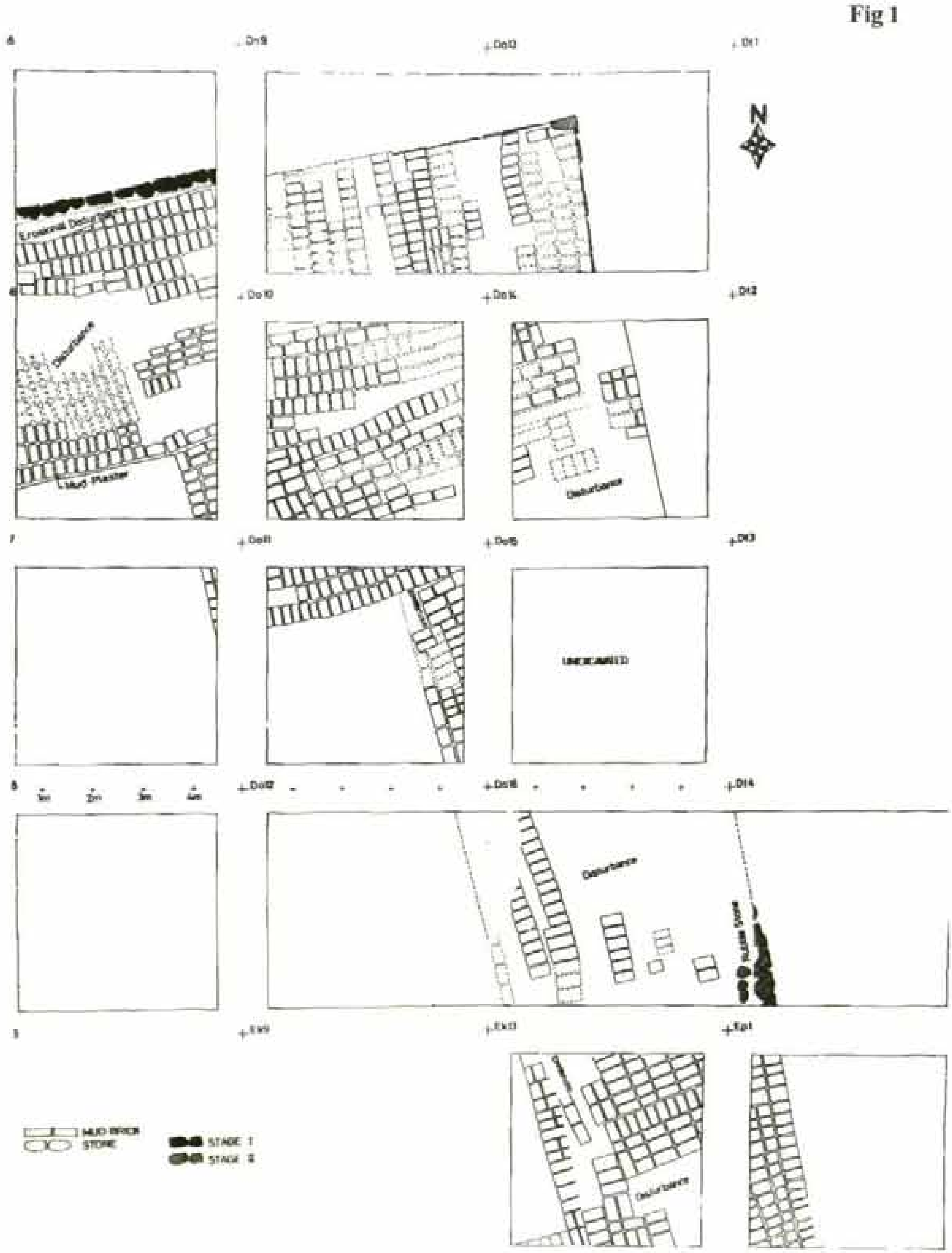
In continuation of the earlier work (*1995-96,* pp. 16-22), the Department of Archaeology, M.S. University of Boroda, Vadodara, resumed excavation at the Harappan site at Bagasra, under the direction of V.H. Sonawane, assisted by P. Ajithprasad, K.K. Bhan, S. Pratapachandran and Abhijit Majumdar with a view to understanding the plan and layout of the periphery wall besides exposing its main features. This year's excavation revealed various aspects of the wall including different stages of its rebuilding and expansion

A part of the inner-side of the mud-brick periphery-wall in the northern side was already unearthed in Trenches D 7 and D 6 during last season's excavation. Considering this, eleven new trenches were opened up in the northeastern corner of the mound in order to trace the extension of the wall towards east from the Trenches D 6 and D 7 and towards south from the northeastern corner. These trenches are, in fact, extensions from the trenches opened up during the excavation in the last season. In most of the trenches, excavations were confined to exposing the top part of the mud-brick wall, by tracing the external and internal limits/boundary of the wall and exposing one or two courses of brick. It is only in Trench D 5 that deep digging along the wall was carried out with a view to reconstruct the history of the periphery-wall.

The excavation revealed about 15 m of the wall at the northern side and about 25 m at the eastern side in the northeastern corner of the settlement (fig. 1). Besides, in Trench D 5, the excavation was continued till the natural sediments were reached. It appears that the perimeter-wall was constructed in two distinct stages and in both the stages a similar style and pattern of wall construction was followed by the Harappan people at Bagasra. The wall generally consisted of a stone-built basal part, followed at the top by a high mud-brick construction (fig. 2). The extant height of the wall from the base, combining both the stages, is about 3 m in which about 2.20 m at the base was built of large sandstone blocks, quarried from nearby sandstone formations. The extant height of the mud-brick wall belonging to Stage II and lying on top of the stone base is about 0.90 m to 1.10 m. The width of this last stage mud-brick wall at its top varies from 5.00 m to 5.20 m.

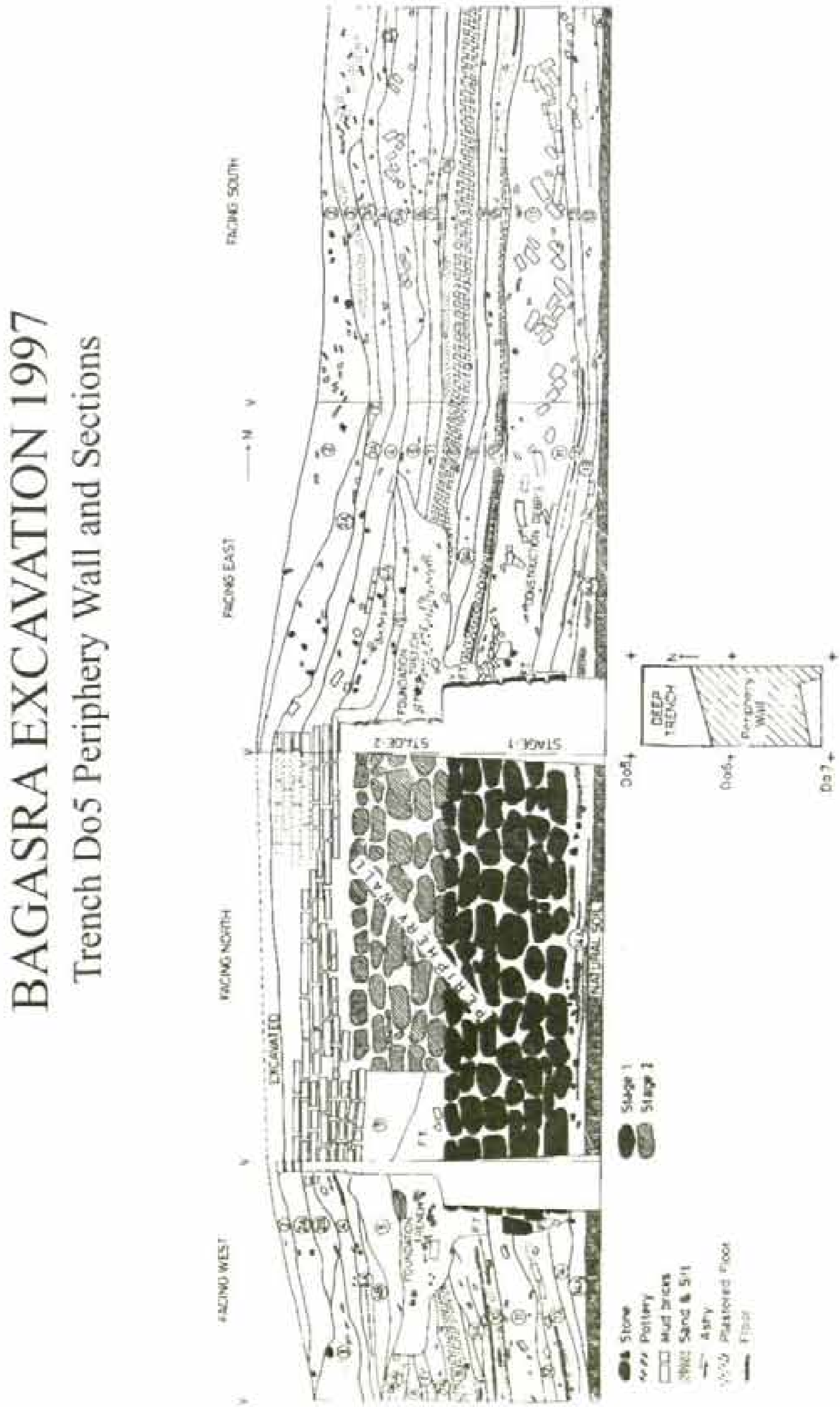
Construction of the above periphery-wall postdates the beginning of occupation at the site. The wall was found resting on a 40 to 50 cm thick cultural deposit, represented by the layers 12,13 and 14 in Trench D 5 (fig.2). This deposit predates the wall and lies directly over the dark, clayey natural sediments with remains of two successive thin clay floors. The foundation trench of the wall, in fact, cuts through the above pre-fortification deposit. Ceramic assemblage

Fig 1



BAGASRA 1997 Trenches Do 5-7, Do 9-14, Do16, Ep 1& Ek 13
Plan of Periphery Wall—North-East Corner

Fig 2


BAGASRA EXCAVATION 1997
Trench Do5 Periphery Wall and Sections
FACING WEST
FACING NORTH
FACING EAST
FACING SOUTH
EXCAVATED
PERIPHERY WALL
NATURAL SOIL
STAGE-2
STAGE-1
DEEP TRENCH
Periphery Wall
Do5
Do6
Do7
Stage 1
Stage 2
Stone
Pottery
Mud bricks
Sand & Silt
Ashy
Plastered Floor
Floor

from this early deposit predominates the local variety of pottery, mainly imitating the Harappan vessels and the Anarta pottery of north Gujarat region, apart from a few Harappan sherds.

The basal stone masonry wall in Stage-I with a height of about 1.20 m comprised six courses of large blocks of stone, two of which formed the foundation. However, about 40 cm thick construction debris consisting of rubble-stones and brickbats accumulated at the base of the wall (layer 11), conceals about two more courses of stone-blocks. The sandstone blocks used in the construction were subjected to a simple, preliminary dressing, probably using a broad edged copper/bronze celt, as a series of shallow scoop marks are visible on them. The corner stones at the northeastern corner of the wall, on the other hand, was finely dressed and shaped by using a chisel or a punch.

Since this stone base was used as a foundation for later construction in the second stage after pulling down the mud-brick top, the original construction above the stone base of Stage 1 periphery-wall could not be traced. Considering the deposit accumulated against the wall before it was rebuilt, it appears, that the mud-brick wall had a minimum height of about 1.25 m from the top of the stone-built base. The deposit lying against the wall includes many distinct layers (layers 10 to 6) and a series of plastered floor in the layers 10 to 8 (fig. 2). The floor was made of a fine calcarious clay-plaster of light grey and cream colour applied successively, one above the other, forming thin alternating bands. The plastered floor in layer 8 was about 20 cm thick and reasonably well preserved. A similar kind of plastered floor extending from the periphery-wall towards the inner side of the settlement was also uncovered in Trench D 7 during the last season's excavation.

The wall, especially the mud-brick built top part, was subsequently reconstructed with a view to increasing its height. This new activity represented the second stage of construction of the periphery-wall. In order to give a solid foundation to the periphery-wall, a large foundation trench was dug not only by removing the remains of the already damaged mud-brick wall but also by removing the deposits lying directly against the brick-wall. Thus, the bottom of the narrow foundation trench" touches the top of the stone-wall which was hitherto concealed under the thick habitation deposit.

Construction of the new wall (Stage II) commenced from the top of the stone base of the earlier (Stage I) wall, but after leaving a space of about 35 cm to 40 cm projecting out like a ledge/ platform all around the periphery-wall. Stone base of the wall in the second stage has a height of lm consisting of five courses of stone-blocks set in mud and clay mortar. The top part of the wall was made of mud-bricks and it had an extant height of 0.90 m to 1.10 m incorporating ten courses of brick. The mud-bricks used in the construction are generally of three varying colours, composition and compactness: (a) a dark greyish, (b) yellowish brown, and (c) a light ashy-grey. The bricks are of different sizes too. While some of them are very large, measuring 12 cm x 24 cm x 48 cm, the most common sizes are 8 cm x 1 6 cm x 32 cm and 9 cm x 18 cm x 36 cm.

The base of the wall is slightly broader than the top and it seems that the outer face of it was periodically repaired and rejuvenated by putting thick layers of mud-plaster and sometimes even by buttressing the basal part with bricks. This is evident from an overlapping of one or two courses of mud-brick with the last course of stone-blocks in the base of the wall.

So far, no evidence of an external bastion at the northeastern corner could be traced. On the other hand, it has a simple square internal bastion in the form of 3.80 m wide projections from the northern and the eastern wall at the interior of the northeastern corner (fig. 1). In the later period, the corners around this bastion were filled with brickbats and other material from wall collapse and it was consolidated by a compact clay plaster. This treatment completely conceals the sharp corners of the bastion.

The eastern side of the wall extends further south in the Trenches D 4, D 16, E 1 and EK13 from the north-east corner (fig. 1). The bricks forming the top part of the wall excavated in the above trenches are much disintegrated and therefore, both the internal and external margins of the wall are not clearly demarcated. Remains of the stone wall were found right on the surface in Trench D 4. The excavation revealed seven courses of stone-blocks in this part of the wall where further excavations will be carried out in the next field season.

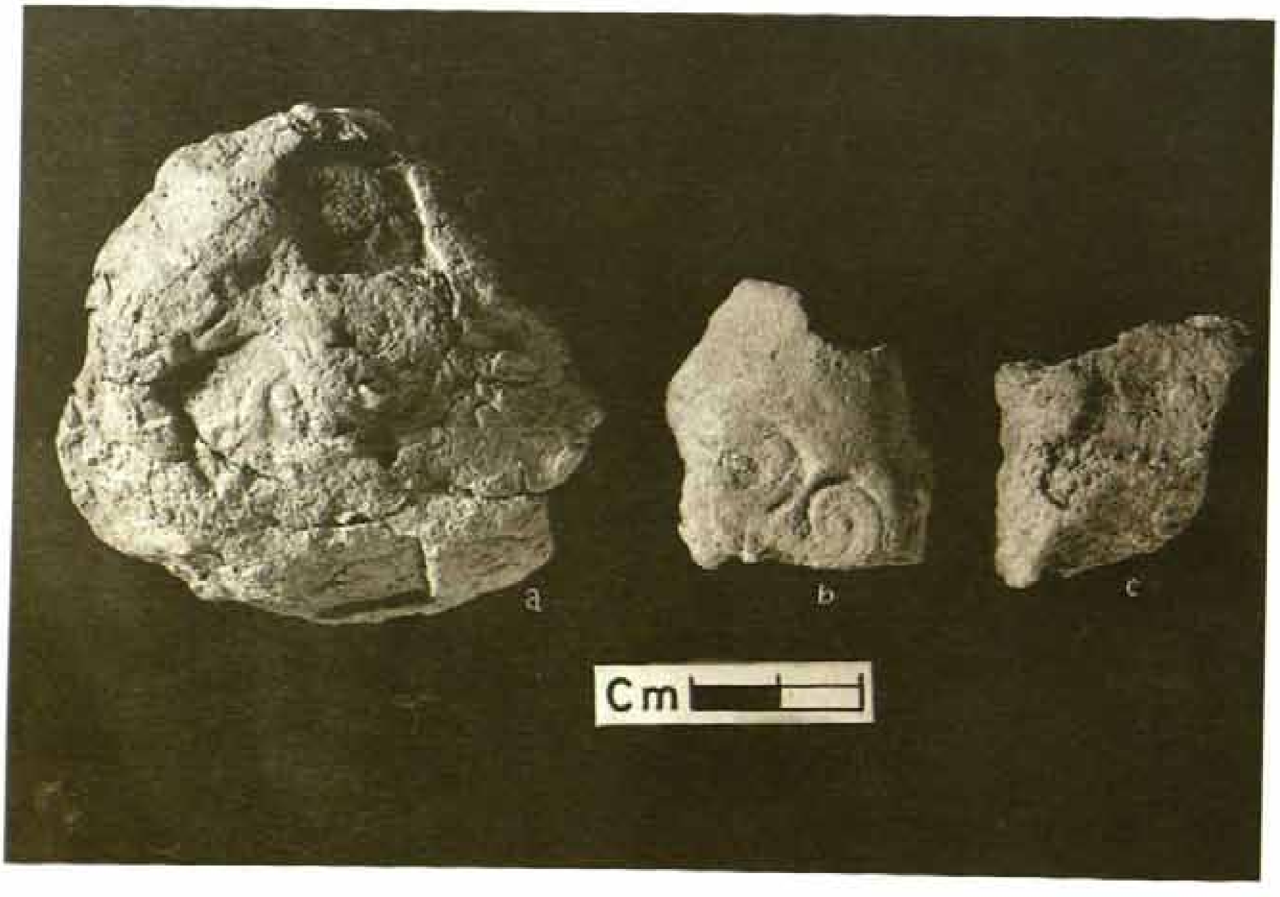
A number of artefacts including a few terracotta stamped sealings, copper and bone implements, beads of semi-precious stones, faience and shell, bangles and inlay pieces of shell, terracotta figurines and toys and a considerable quantity of different types of pottery vessels have been collected from the excavation.

Three fragmented pieces of terracotta sealings with stamped impression were recovered (pl. IX). These include a large fragment of a conical sealing bearing five distinct stamped impressions, apparently of a single square seal measuring 1.40 cm x 1.40 cm. Although much abraded, it shows embossed impressions of 'unicorn' figure and a standard in front of it. There are also some faint impressions of an inscription in Harappan script at the top. The second sealing recovered in the excavation bears the stamped impression of a square seal with an embossed-pattern of small square grid. Although too fragmented, it bears three such partial impressions. The third terracotta sealing bears the stamped impression of two spirals. This spiral pattern resembles the pattern of concentric circles engraved on the square steatite tablets unearthed from Kalibangan in Rajasthan and from Nagwada in Gujarat. The broken backside of these three terracotta sealings show the impression of a cylindrical rod and a cord wound around it, probably the impressions of some sort of a device used for sealing consignments by the Harappans.

The nature of ceramic assemblage unearthed in the excavation remains more or less the same as was reported in the last season. A preliminary sorting of the various pottery types indicates that these could be classified into three major categories:(a) Urban/Mature Harappan pottery, (b) Sorath Harappan pottery, and (c) Anarta pottery of north Gujarat region. In addition to these three major classes, there is also a fourth variety which, in fact, is a local tradition mainly imitating the shapes of the Harappan. In its texture and appearance it is closer to the fine variety of Anarta pottery than the Harappan.

The local pottery is relatively abundant in the pre-fortification/pre-periphery-wall deposit comprising the layers 12, 13 and 14. It is represented by bowls with in-curved rim, small pots and dishes. Also associated with this were a few Anarta pottery and occassional sherds of the classical Harappan pottery. It is interesting to note

Plate IX



Bagasra : terracotta sealings

that a single sherd of a black-and-red ware bowl was also found from this early level. The actual significance of this could not be ascertained as it was found in isolation outside the walled area of the settlement. Black-and-Red ware was absent in the succeeding upper strata and reappeared only in the last phase, from layer 5 onwards. In addition to the black-and-red ware, the upper levels (layers 1 to 5) yielded a number of Sorath Harappan vessels, especially convex-sided bowls, stud-handled bowls, pots and jars of medium size and large pots and basins in red ware and buff ware. A few sherds of Micaceous Red Ware, sometimes with the characteristic paintings were also part of this later period deposit.

The intervening deposit in the middle represented by the layers 6 to 11, revealed a number of classical Harappan pottery, a few Anarta pottery and the local pottery types in varying frequencies while beakers and narrow pedestalled-goblets/vases were reported in abundance from the middle phase of habitation inside the walled area during excavation in the last season. Only a single sherd of each of these vessels was reported in the current season from the deposit lying outside the periphery-wall. Other vessels like the dish-on-stand, large basins with projected rim, S-shaped jars with flanged rim, perforated jars, tall vases with flat base were also common in the collection.

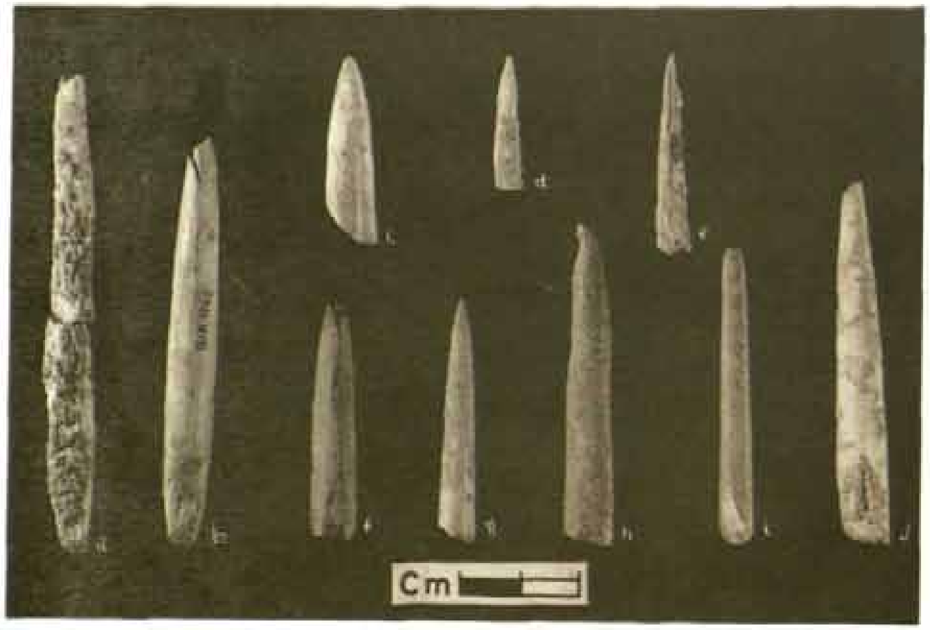
The assemblage included a number of Reserved Slip Ware, in varying colour schemes like black and grey or red and pale yellow or cream; and a few sherds of a variety of surface-roughened Wet Ware. Another interesting pottery is a small sherd with cut-out triangular perforations which resemble the Cut-Ware reported from Mohenjodaro. This red ware pottery has a thin wash of light cream slip.

Two separate rims and a few more sherds of the black-slipped jars were also found in the current excavation. While one of the rims was collected from the surface, the second rim was found in layer 11, representing the construction debris of the periphery-wall belonging to Stage I. It was believed that these pots were used for overseas transportation of goods by the Harappans at the site and started from the early days of settlement itself.

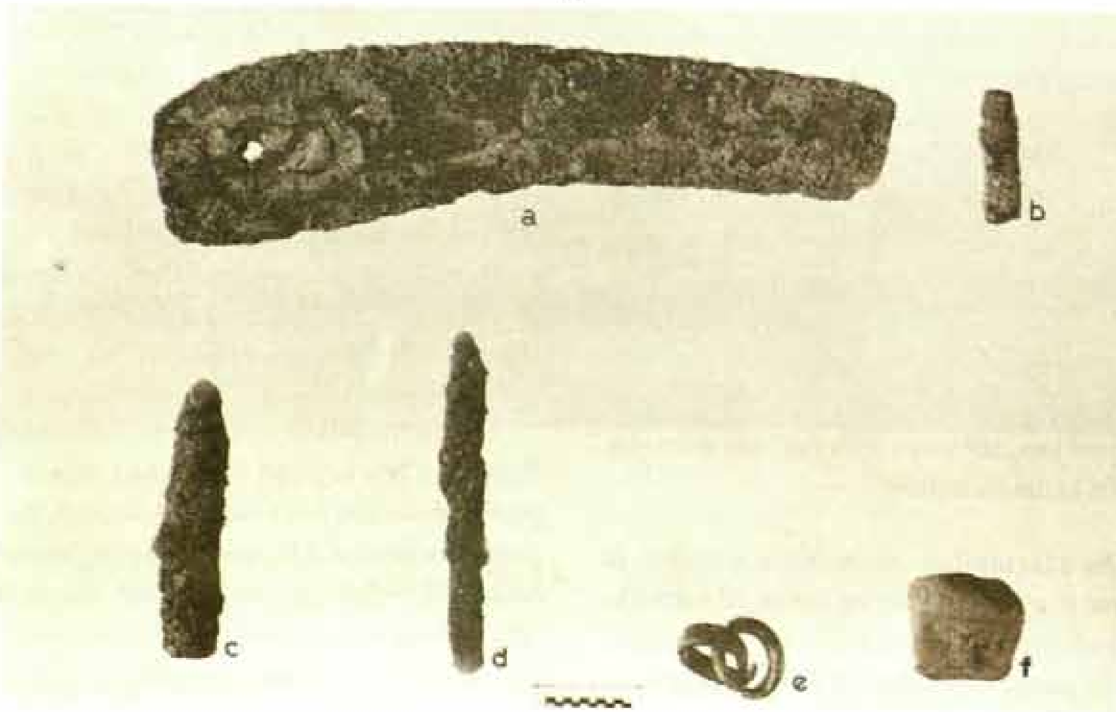
Among the other artefacts found in excavation, mention must be made of a number of bone/horn points of different sizes (pl. X A); copper implements such as rods, a fragmentary chain, a knife, a small broken chisel head (pl. X B) and lithic blade tools of Rohri chert and other locally available raw materials like chert, jasper and agate. Two specimens of the cubical agate weight rough-out were also recovered in the excavation. Besides, a few ornamental beads of carnelian, lapis lazuli, faience, wafer thin disc beads of steatite and a variety of shell bangles, some of them with the chevron motif, and inlay pieces were also found. Marine gastropod shells of *Turbinella pyrum, Chicoreous ramosus* and *Fasciolaria trapezium* were extensively used in their production.

The terracotta objects comprised a small bull figurine, a few toy-cart wheels and chassis, tops, pottery discs and inlay pieces. Although the front part of the head and the two projecting horns have broken off, the bull figurine shows very fine modelling with a prominent hump and a short tail. Both front and hind legs, are joined together in a mass of clay. It resembles a number of similar bull figurines with joint limbs recovered from the early, Period II B deposit at Harappa.

Plate X



A



B

Bagasra : A, *bone implements, (a-b) bevelled edges, (c-j) pointed and* B, *copper/bronze implements, (a) knife - blade, (b) wire - piece, (c-d) points/nails, (e) chain links, (f) broken head of a chisel or punch*

A good quantity of skeletal remains of domestic and wild animals exploited by the Harappans at the site was unearthed here. Apart from these two, the third important component of the subsistence economy of the inhabitants was extensive exploitation of marine/aquatic fauna. This included varieties of large marine fish whose vertebrae, otoliths and other remains were found in abundance. Other items exploited at the site were aquatic arthropods like lobsters and crabs; and varieties of calms and other edible bivalves. Also collected were a number of light fraction samples after floatation of carefully selected samples from habitational deposits with a view to procuring floral remains.

15. EXCAVATION AT JOGPURA, DISTRICT VADODARA

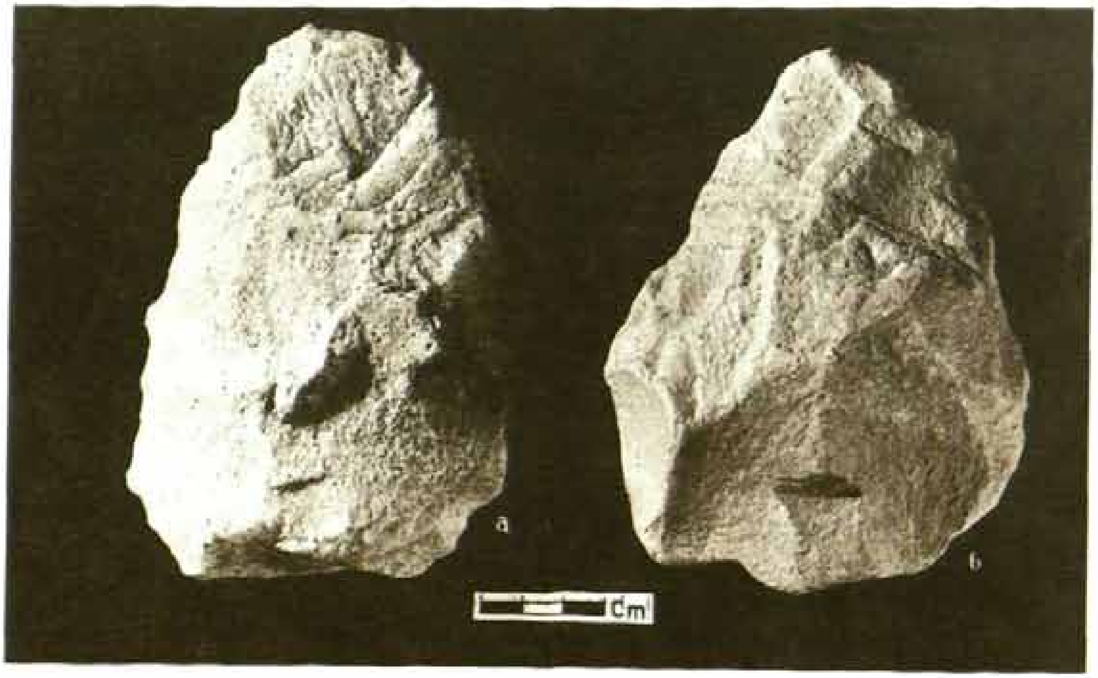
Ajithprasad of the Department of Archaeology, M.S. University of Baroda, Vadodara, conducted excavations at a few of the Acheulian localities in Jogpura village, in Pavi-Jetpur taluk. The Department received the Ford Foundation Grant for the project.

The Acheulian primary localities in Jogpura (22° 30' N; 73° 46' E) is situated at the top of an extensive hilly ridge about 340 m (478 MSL) above the ground level. In fact, these rocky ridges are the erosional remnants of the original high tableland; and at present they have an east-west strike for almost a stretch of 10 km to 12 km starting from Dungarwant in the east and merging with the alluvial plain of Poyli village in the west. The top part of this hilly ridge, due to structural features and erosion, appears like a slightly tilted amphitheater with high rocky ridges and flat rock promontories all around and erosional gullies of varying morphology in the centre. Currently it has enough soil cover and perennial sources of water which support tribal life at this height. The aforesaid primary Acheulian and early Middle Palaeolithic sites are located in this geomorphic context and they are much better preserved than the sites located at the foot of the hills.

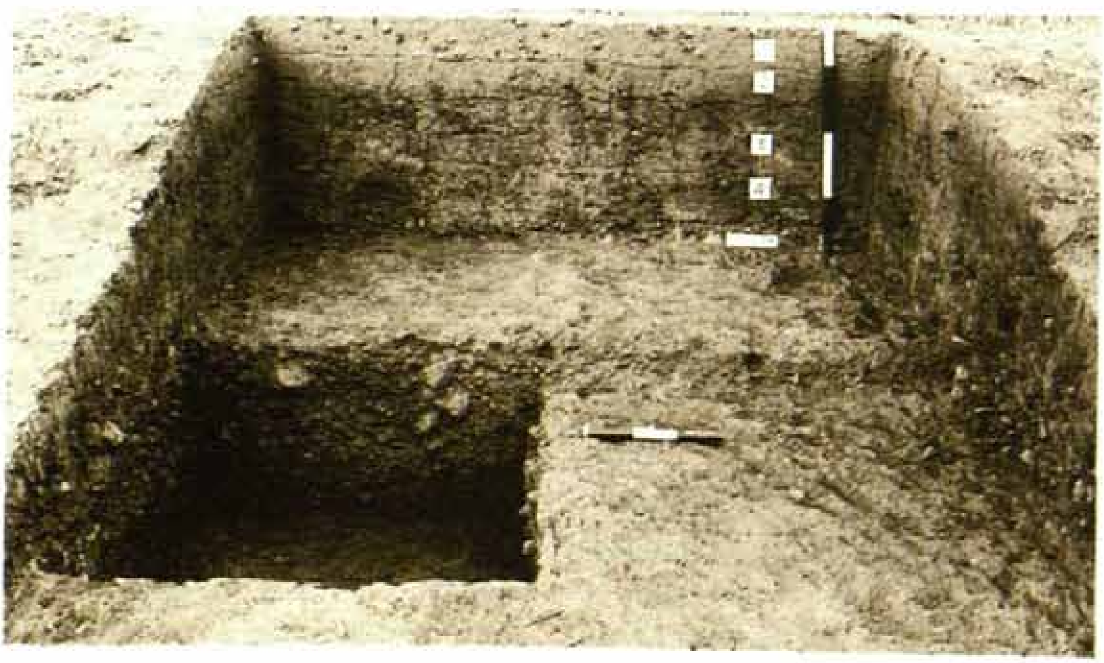
The main types of rock formations found in this region are the extensively exposed granite of the Precambrian belonging to the Vindhyan series and the quartzite and gneissic schist belonging to the Aravalli series. Quartzite of different hue and colour occurring in these ridges were extensively used for making implements during the Palaeolithic period. The main quaternary formations in the valley are the alluvial deposit of the Sukhi and the colluvial deposit composed of cobbles and rock clasts of quartzite and quartz often intermixed in a reddish or yellowish calcareous sand-clay matrix derived from the weathering of granite. This deposit incorporates both abraded and unabraded artefacts of the Acheulian period. On the other hand, the Acheulian artefacts at the top of Jogpura hills were found associated with a bright reddish soil.

The Acheulian and early Middle Palaeolithic localities in this area have been identified as discrete clusters of artefacts and their debitage spread on the surface in the open air. Some of these localities incorporated a number of heavily abraded artefacts along with a very fresh and unabraded tools. Besides, while the abraded artefacts were covered with heavy patina, the unabraded ones have little patina. Some of the abraded tools were rejuvenated/ refashioned by deliberate flaking and retouching in the later period in which the freshly flaked parts stand out in marked contrast with the abraded part covered with patina. These features were observed in the artefact assemblage from many of the Acheulian sites located earlier in the foot-hill region in the valley too. Since, both abraded and unabraded tools currently occur on the open land surface, no stratigraphic

Plate XI



A



B

Jogpura : A, *handaxes (abraded and unabraded)*; B, *section facing east, late Acheulian, early Middle and Middle Palaeolithic strata*

distinction between the two could be established. Hence, one of the main objectives of the excavation at Jogpura was to ascertain the stratigraphic context of these two groups of tools.

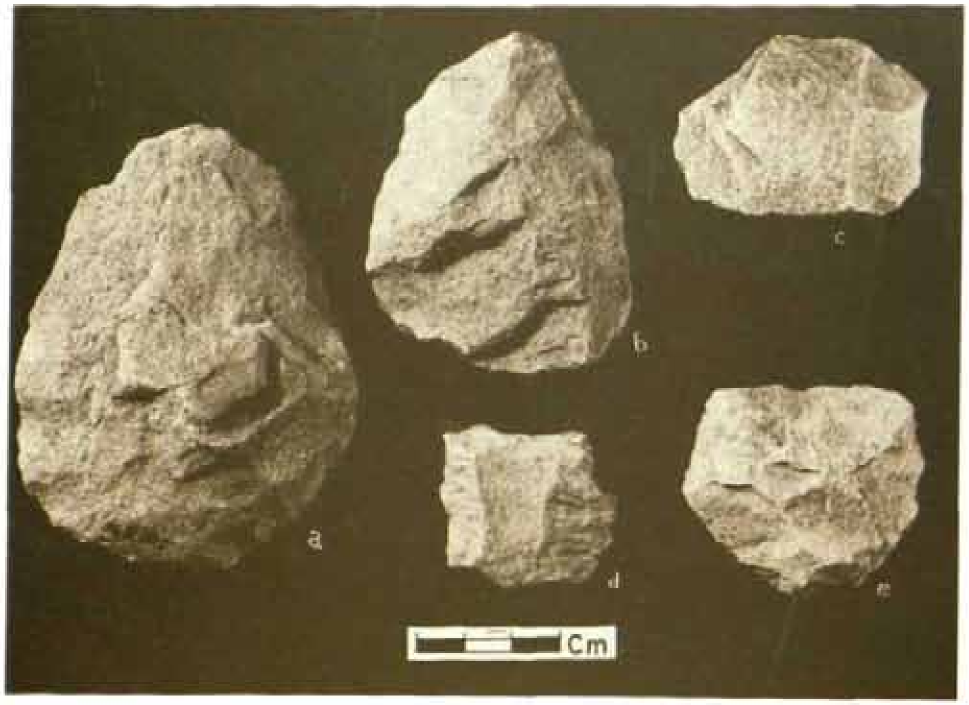
Three trenches of varying dimensions were opened up at the site with the above objectives. Trench I was put at an area where both the abraded and unabraded artefacts were found mixed together on the surface in abundance. Features of distribution and relative position of artefacts on the surface were meticulously recorded using a grid plan in this 10 m x 10 m trench. The excavation, however, was confined to only one half, that is 10 m x 5 m of the trench. The soil cover in the western half of the trench was hardly 15 cm deep and the artefacts were virtually lying on top of the soft disintegrated gneissic schist. The eastern half on the other hand revealed a 65 cm to 80 cm deposit, which slopes down gently from the west towards east. All through the deposit incorporated both abraded and unabraded artefacts (pl. XI A) except in the bottom most deposit yielding only abraded tools. This deposit is a narrow rain-gully between two gneissic rock which got deposited with abraded artefacts. That, it is clear from this piece of evidence, when the original gullies were filled up by the abraded artefacts, the fresh unabraded tools were not existent at the site for erosional movement. Thus, even though, at present both these types of tools are found mixed together on the surface at the site, it is apparent that the un-abraded tools are several thousands of years younger than the abraded ones.

Lying immediately above this is the mixed deposit of abraded and unabraded tools belonging to the Acheulian period. This deposit is very thin, measuring hardly 15 cm to 20 cm, and it is followed by a 25 cm thick sterile layer. The top most deposit, from 20 cm onwards, incorporates along with the earlier mentioned tools, a number of quartz implements which belonged to the early Middle Palaeolithic period. It is apparent from these features that the region has undergone different erosional episodes which had profoundly effected the primary localities of Palaeolithic settlement. Hence, it is necessary to study the micro-depositional features of each site within the larger environmental frame-work, to understand the site formation process that were active at the site.

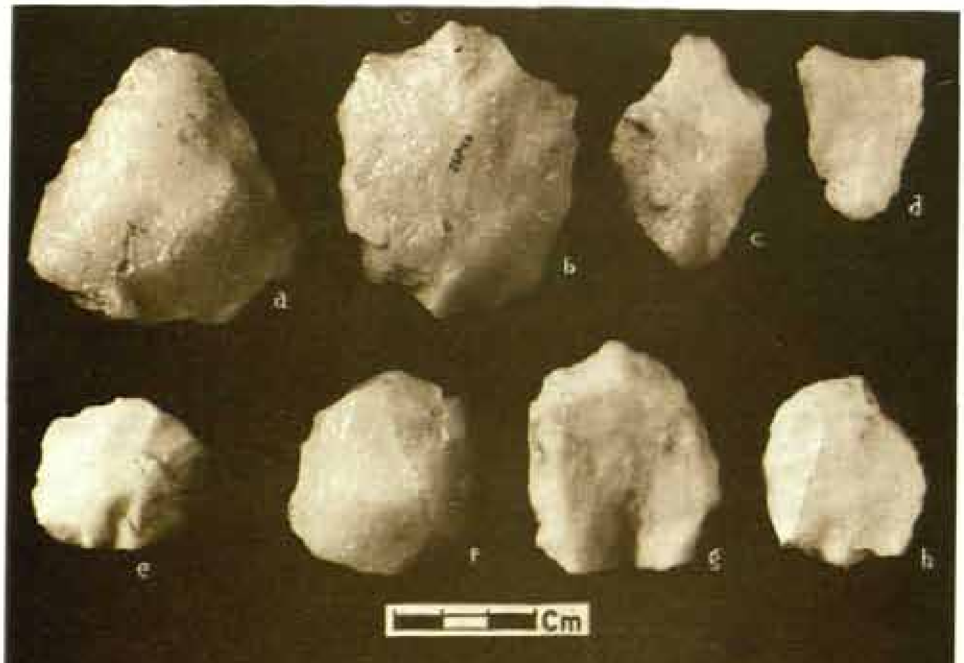
A small trial-trench was opened up at about 150 m north of the first trench in the midst of quartzite outcrop with a view to collecting evidence regarding raw material exploitation pattern. Total deposit of debris in the trench measures 50 to 60 cm and impenetrable large blocks of quartzite hindered further digging. This deposit has yielded a large quantity of the Acheulian industry debitage predominated by waste flakes and chips. Notched scrapers too, fabricated on a variety of flakes and sometimes even on large nodules, were found in abundance in this assemblage. Only very few diagnostic finished artefacts were found in the collection. It appears, while a few artefacts were manufactured at the place itself, large blocks of quartzite were extracted from the outcrop and transported to other places in the site for fabricating Acheulian tools. This assemblage contains only fresh unabraded artefacts generally belonging to the late Acheulian period.

A trench measuring 3 m x 2 m was put in an area located at about 100 m south-west of the Trench I, showing a marked concentration of early

Plate XII



A



B

Jogpura : A, late Acheulian and early Middle Palaeolithic artefacts; B, early Middle and Middle Palaeolithic tools

Middle Palaeolithic artefacts with a view to establishing the stratigraphic context of the Acheulian and the early Middle Palaeolithic deposits. The excavation revealed a total deposit of 80 cm (pl. XIB). The topmost layer upto a depth of 20 cm belonged to the Middle Palaeolithic occupation. The artefacts collected from this deposit included mainly various types of scrapers and retouched flakes, predominantly on quartz. It also included a few early Middle Palaeolithic tools. This deposit was preceded by about 20 cm thick sterile, slightly clayey deposit. Below this deposit was found the artefacts of the early Middle Palaeolithic and the late Acheulian. This deposit was found resting on the disintegrated top of the bed-rock of gneissic formation. No stratigraphic distinction between the two tool types could be found in this deposit. On the contrary, it appears that it marks the continuation of the Acheulian tradition. The artefacts collected from this period include two well-made late Acheulian handaxes, scrapers, chopping tools, a number of retouched flakes and two miniature handaxes (fig. XII A), scrapers made on Levallois flake, retouched and used flakes and various debitage of the industry. A small circular open fire-place/hearth, measuring about 30 cm across and showing good concentration of charcoal was also found in this bed along with the early Middle Palaeolithic and late Acheulian tools.

In addition to these, many distinct concentration of artefact clusters at the site have also been demarcated and mapped with a view to studying the functional relationship between them. At a few of these localities, systematic collection and recording of the pattern of artefact spread on the surface were also carried out. A preliminary study of the data so far collected indicates that the early Middle Palaeolithic culture at the site developed into a rich Middle Palaeolithic culture which predominantly used fine-grained milky quartz for preparing flake tools (pl. XII B).

HARYANA

16. Excavation at Balu, Distirct Kaithal

S.P. Shukla, Arun Kesarwani, B.K. Kathil, N.P. Nawani, M. Singh and other members of the Department of Ancient Indian History, Culture and Archaeology, Kurukshetra University, Kurukshetra, resumed excavation at Balu, in continuation of the earlier work (*1994-95,* pp. 27-28).Trenches(L4, L 5, M 3, M 4, M 5, and N 4) were laid on the southeastern side of the mound to expose Harappan and pre-Harappan house plans. A big house planned diagonally with several rooms, of which three rooms were exposed in the trenches (L 5, M 4, M 5, and N 4). The walls were made of mud-bricks (72 cm x 36 cm x 12 cm) which measured 80 m in width. The corner room measured 4.12 m x 2.70 m. Its walls contained five courses of mud-bricks yielding the relics of three successive floor-levels. At the depth of 50 cm, an earlier mud-brick wall of the Harappan phase was encountered. The diagonally running wall of the structure suggested an open courtyard forming part of the house. The above house most probably had an entrance in one of the rooms, located on the southwestern side. In Trench M 3, a *gali* measuring 87 cm, was found between two mud-brick houses. Several antiquities were recovered but the significant ones included chert blades, copper objects, terracotta bird-shaped whistle, bone points and beads of steatite. A triangular terracotta cake had two incised crossed lines. A few sherds of big pots of typical Harappan form and design were recovered. The painted designs included *pipal* leaf, fish motif and

other forms. On a few sherds the use of white colour has been attested to.

In Trench M 5, a mud-wall (width 40 cm), made of blackish sticky clay, below the Harappan ashy material, belonging to the pre-Harappan phase was exposed. It was diagonally laid from NW to SE direction.

In Trench M 6 the relics of a workshop having a *bhatti,* a big pot inserted in the ground and two post-holes, about 3.45 m apart, were exposed. The latter may have been used to provide a thatched shade. Apart from this, three *bhattis* were also exposed in Trench L 4, belonging to the late Harappan phase. The area seems to have been used for industrial purpose, when the habitation was shifted to other parts of the mound. A wall made of single mud-brick course running north-east to south-west in this trench was found disturbed by subsequent habitation.

As a result of cutting and levelling of the northern part of the mound by the farmers, the Harappan defence wall was badly damaged. A few trenches (Ax Ext 7,8, Cx Ext 7 and Dx Ext 7) were laid to expose the same. The excavations revealed a massive bastion, 15.10 m in width, built of mud-bricks of various sizes (44 cm x 22 cm x 11 cm, 40 cm x 20 cm x 10 cm, 20 cm x 20 cm x 7 cm, 26 cm x 22 cm). The defence wall was traced upto 9.90 m from the eastern end of the bastion. A hole in the bastion yielded two hundred and twenty-five small beads of steatite of uniform size. A house plan near the defence wall was partly exposed. After a lapse of time the bastion had partly collapsed as the fallen bricks were exposed at the periphery. One of the most interesting finds of this season's work was the discovery of a knobbed-steatite seal with *svastika* symbol. It was discovered from the debris on the southwestern part of the mound which was disturbed by the farmers.

HIMACHAL PRADESH

17. Excavation at Chetru, District Kangra

The site of Chetru (32°10' N;76° 8 'E) was excavated jointly by the Chandigarh Circle of the Survey and the Department of Language and Culture, Shimla, under the supervision of P.K Mishra and H.L Garg, assisted by Jasmer Singh, Piyush Bhatt, Rahul Bhosle, A.V. Naganoor, Vinod Kumar, R.K. Saproo, Baldev Singh, Rajesh Bakshi and Gauri Dutt. The objectives were to investigate the nature of occupation and structural activity at the site.

Excavation revealed a single culture settlement assignable to *circa* second-third century AD with two phases of structural activity.

In phase I, a semicircular undressed pebble-stone structure was exposed, the extension of which remains to be confirmed. The pottery in this phase was mainly of red and micaceous red ware, which, due to water logging, have turned into an ochreous tint. However, a few sherds of plain grey ware were also found. The shapes included bowls, dishes, spouts, basins and pitcher etc. A broken portion of the upper-half of a sprinkler was also found.

In phase II, burnt-brick and an undressed pebble-stone circular structure has been encountered. The length could not be determined as none of the bricks showed a complete shape. The other objects of this phase comprised an oblong, spherical crystal bead, a somewhat square-shaped terracotta tablet, a broken ear-stud and a head scratcher. The pottery of earlier phase continued but the grey ware is conspicuous by its absence.

18. Exporation in District Kinnaur

Jasmer Singh, Piyush Bhatt, Rahul Bhosle, Vinod Kumar, Rajesh Bakshi and Gauri Dutt

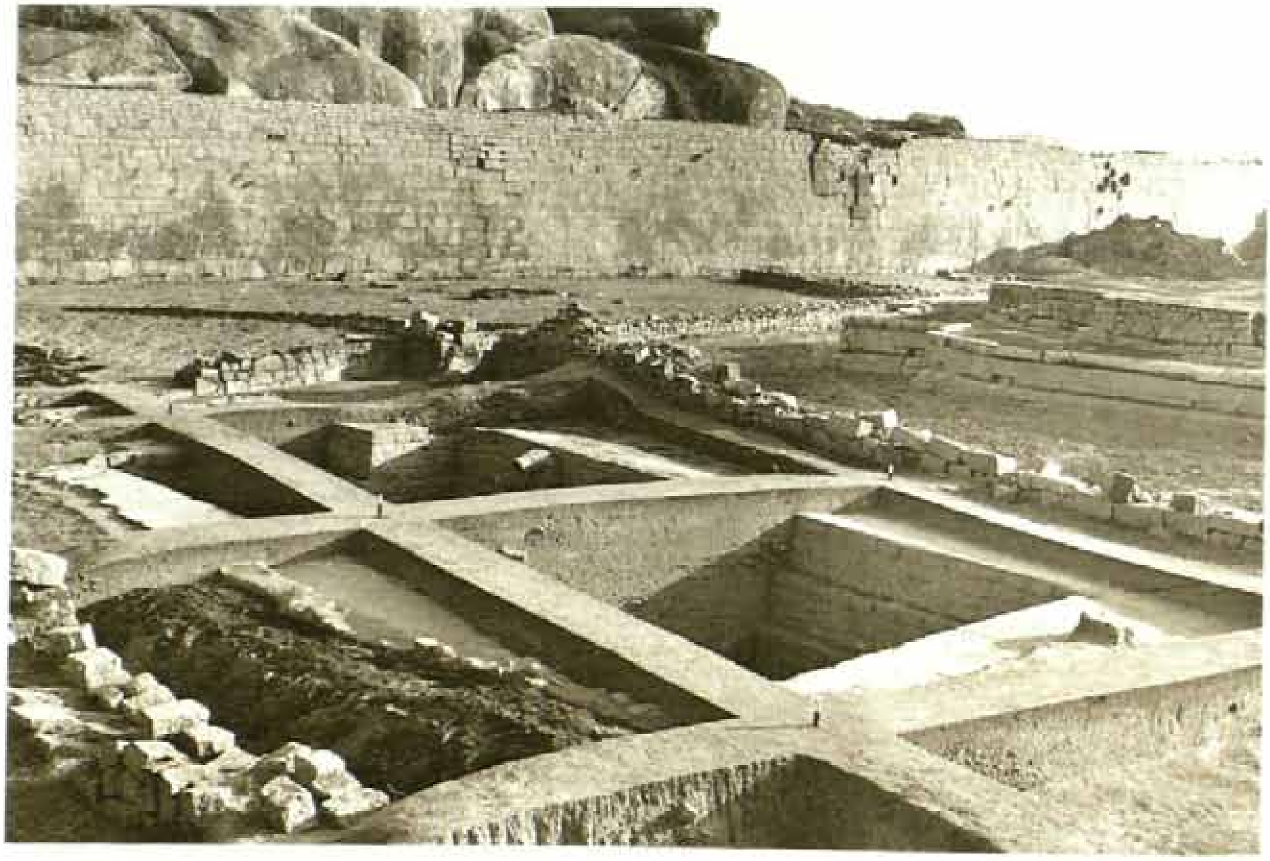
Circle of the Survey, explored sixteen villages in District Kinnaur and located twenty sites of archaeological importance.

Village/Sites	*Nature of remains*
Chagaon (31°32'N;78°05'E)	Four temples in pagoda-style, on a stone plinth with roof in three tiers; tripple-storeyed Siva temple of pagoda-style made of wood. The uppermost roof is circular while the rest are triangular (late medieval period)
Kalpa (31°32'N; 78°15'E)	Vishnu Temple-complex in pagoda-style comprises the main temple, a fort and a chouring. The main temple on a high stone plinth has been completely renovated which consists *of a garbhagriha* and *pradakshinapatha,* both constructed over a dressed-stone platform. The double-storeyed, two-tiered fort topped by finial of *amalaka* and *kalasa,* with walls made of wood and stone; Narayana Temple-complex in pagoda-style consisting of four structures two main temples, one *kothi* and one gate. The main temple comprises a squarish *garbhagriha* with an image of Narayana. The walls are of dressed-stones alternated by wooden beams (late medieval period)
Kamru (31°26'N; 78°15'E)	Buddhist temple, squarish on plan, battering roof of slatestone (late medieval period)
Kaphnu (33° 37'N; 78° 02' E)	A rectangular temple in pagoda-style with high plinth of stone; Buddha Temple (Dalai Lama Dujjam), suqarish, complete wooden construction on a stone-plinth having tapering wooden roof (late medieval period)

Village/Sites	Nature of remains
Katgaon	A Siva Temple-complex in pagoda-style, comprising six structures (late medieval period)
Kilba (31°29'N; 78°10'E)	Badri Narayana Temple-complex in pagoda-style set in the village and fully renovated; the complex comprises two structures locally known as Kala Kothi or *Killa* (fort) and *kothar* (store). The three-storeyed temple standing on a stone-plinth with wood and stone walls; roof of slatestone supported by wooden beams topped by *amalaka* and *kalasa* (late medieval period)
Kilba (31° 31' N;78° 09'E)	A *baoli* (tank) locally known as Bayo-Mating, enclosed in rectangular stone stairs and is about 1 m deep; a few figures of animals like seated bull, *Siva-linga,* hero-stone, besides wooden sculptures representing Siva and female heads and miniature shrines of stone attached to the southern walls (late medieval period)
Kothi (31° 31' N;78°09'E)	The Mahakali Durga Mandir-complex in pagoda-style, consisting of a rectangular gate, a single-walled stone structure with roof supported by four carved pillars on either side; rectangular three-storeyed main temple with walls of dressed-stone and wooden beams, followed by a four-tiered roof, all made from slatestone in Nagara style; the most important structure of the whole complex is a Siva Temple, square on plan, made of dry masonry, consisting of a *garbhagriha* and pillared-porch with a single roof at one point; *linga and yoni* are present in the *garbhagriha* (late medieval period)

Village/Sites	Nature of remains
Nachar (31°33'N;77°59'E)	Three wooden temples in pagoda-style with tapering slatestone roof, highly carved on all sides in floral and animal patterns (late medieval period)
Roghi (31°31'N;78° 14'E)	The Narayana Temple-complex in pagoda-style showing a combination of three structures, i.e.,the main temple, the fort and chouring, all enclosed within a stone-boundary; main temple fully renovated standing on a low plinth and walls of wood and stone with tapering roof; circular canopy topped with *amalaka, kalasa,* full moon and crescent; double-storeyed *kothi* (fort) raised on a high plinth of stone and made of wooden beams and stone; chouring (*kothar)* with pillared-wall, topped with three-tiered roof; small Vishnu Temple in pagoda-style with *garbhagriha* and porch raised on a small plinth of stone marked by intricately carved gate (late medieval period)
Sangla (31°25'N;78°16'E)	Devi Mandir-complex in pagoda-style showing three structures, decorated with floral, animal and human motifs; small temple-complex known as Badrinatha Temple in pagoda-style, consisting of a stone gate with wooden doors led by steps further; main temple is squarish on plan, completely made of wood with balcony in first storey; Devi Mandir complex in pagoda-style, three-storeyed with three-tiered sloping roof of slatestone; top floor is decorated with floral pattern (late medieval period)
Sapni (31°25'N;78°16'E)	Peeri Nag Temple-complex in pagoda-style having a gate, main temple and *ratha,* main temple rests on a plinth of stone followed by wooden beams; roof of slatestone grounded by *amalaka* and *kalasa,* profusely carved with floral and human designs; Narayana Temple-complex in pagoda-style, three-storeyed temple dedicated to Vishnu (late medieval period)

Plate XIII



Hampi : water storage tank, during excavation

Plate XIV



A



B

Hampi : A,*water storage tank, after excavation;* B, *nandimukha pranala, water storage tank*

Sungra (31°33'N;77°57'E)	Siva Temple-complex in pagoda-style consisting of a big temple; supported by *ratha* and subsidiary shrines (late medieval period)

KARNATAKA

19. EXCAVATION AT HAMPI, DISTRICT BELLARY

In continuation of the previous year's work (*1995-96,* pp. 25-28), the Bangalore Circle of the Survey, under K.P. Poonacha assisted by T.M. Keshava, T.P. Balakrishna Unnithan and Megharaj M.H. resumed excavation at Hampi.

The excavation conducted towards the west of the Royal residence between the western screen-walls and western enclosure-wall (pl. XIII) revealed a huge water tank in north-south orientation with a flight of steps towards the north. The tank measures 19.20 m in length (north-south) and 8.50 m (east-west) in width, has a total depth of 4 meters (pl. XIV A). The tank is raised in four stages with offsets varying from 0.80 m to 1.20 m in height. All the offsets have uniform width of 35 cm and at the first offset on the western side is a *nandimukha* inlet opening into the tank (pl. XIV B). A small silt tank of 1 m square with a depth of 40 cm is located towards the southwestern side in the tank. The east-west running, major water channel to the north of the Royal residence passes through a sham entrance in the western screen-wall and takes a southern course and joins the *nandi-mukha* inlet. Thus this huge tank built to the western side of the Royal residence served the purpose of storage tank for water. Totally there are eleven steps each with a length of 1.25m, 1.30 m in width and a height of 25 cm. In addition to the above, the moat between the westernmost screen-wall and the western fortification has been cleared of its debris to a length of 52 m and to a height of 2.5 m and a width of over 3 m.

The excavation carried out towards the southern side unveiled a disturbed terraced-residential quarters in east-west orientation, almost parallel to the Royal residence. The structure has a total length of 19 m and a width of 14.80 m and at present extends to a total height of 1.90 m. The structure is built in uncoursed rubble in mud-mortar and is lime-plastered. Atleast three successive stages of lime-plastering is encountered. The eastern facade of the structure reveals veneering members with conventional mouldings similar to the Royal residence with *pada, adho-kumuda,* a narrow *kantha* and an *urdhva-kumuda.* Each terrace descends into successive landing at east by solitary flight of steps. Even these landings are laid with lime-concrete and are lime-plastered. Further to the south-east, east and south of this Royal residential quarter, there are series of disturbed rectangular halls, guard-rooms and screen-walls with zig-zag entrances. The main structure abutting it has an open backyard with the evidences of plastering and a squarish well of nearly 2 m depth at its southwestern side.

Similar to the structures earlier exposed, this large residential structure too appears to have been decorated with stucco figures of birds, animals and creepers. Extensive damage caused due to fire activity and burning is very well evidenced in this structure in the form of lumps of charcoal and ash encountered from the excavation. The deposit varied from 0.50 m

to 2.5 m at different places and reveals three layers of humus, burnt ashy layers with charcoal, brickbats and of gravel.

The antiquities retrieved from the excavation are in the form of copper coins, beads of semi-precious stones, decorated incised Chinese porcelain in addition to medieval grey and red wares.

The excavation carried out in sixteen trenches towards the south and southwestern direction of the Rangamahal in the mint enclosure has laid bare an entrance in the south-west corner, two tanks with a flight of steps towards west and also a series of cloister (rooms) towards the south of the basement of the palatial structure in the east-west orientation. The antiquities comprised a few beads and copper coins.

As a means of simultaneous conservation, the westernmost screen-wall of rubble-masonry of 60 m length and a width of 1.30 m, the north-south running western screen-wall and east-west running southern screen-wall of the Royal residence with a height of 0.3m to 2.25 m and the newly excavated residential quarters in the palace-complex have been restored completely as per the original. As a part of conservation, the zig-zag entrance to the north, north-east of the main structure, Rangamahal and the accretionary terraced rectangular structure of 17.25 m x 13 m was completely restored as per the original by using the available architectural units, in sand lime-mortar.

20. EXPLORATION IN DISTRICT BELLARY

W.V.S.Narasimham, of the Bangalore Circle of the Survey, under the village-to-village survey discovered the following remains in Kudligi taluk.

Appayyanahalli (14° 51'30"; 76° 41'30")	Cist-burials; mound with iron-slag, remnants of medieval water supply system, hero-stones (post-Vijayanagara period)
Belligatta (14° 48' 00"; 76° 32' 00")	Microliths made on chert, iron-smelting site, hero-stones (Vijayanagara period); a palm-leaf manuscript (post-Vijayanagara period)
Ekkegundi (14° 46' 30"; 76° 35' 20")	Iron-smelting site
Ganda Bommanahalli 14°30"; 76° 35' 40")	Medieval fort, iron-smelting site, hero-stones and inscriptions (post-Vijayanagara period)
Gudikote (45° 50' 00"; 76° 38' 00")	Microliths, rock-shelters with paintings, temple, stepped-wells, loose sculptures, hero-stones and fort (Vijayanagara period)

Plate XV



Kumati : anthropomorphic figures

Village/Sites	Nature of remains
Gundumunugu (14° 43' 00"; 76° 31' 00")	Inscriptions and remnants of a mud-fort (post Vijayanagara period)
Halasagara (14° 50' 30"; 76° 40' 00")	Microliths, Neolithic implements, cist-burials, hero-stones, inscriptions and loose sculptures (Vijayanagara and post-Vijayanagara period); iron-smelting site
Haralihalu (14°43’00"; 76° 33' 30")	Tanks (post-Vijayanagara period); Saiva sculptures, hero-stones and iron-smelting site
Haravadi (14° 50' 00"; 76° 30' 00")	Hero-stones (Vijayanagara period) and iron-smelting site
Hulikunta (14° 46' 00"; 76° 32' 00")	Remnants of a medieval fort
Jarmali (14°44’30”;76°28' 00")	Rock paintings, forts, hero-stones, temples and loose sculptures (post-Vijayanagara period)
Kasapur (14° 47' 00"; 76° 38' 30")	Tanks (Vijayanagara period) and iron-smelting site
Kombehalli (14° 43' 00"; 76° 38' 30")	Remnants of a medieval fort; iron-smelting site
Kudire Davu (14° 52' 00"; 76° 33' 30")	Lower Palaeoliths, palm-leaf manuscripts, inscriptions and hero-stones (Vijayanagara period); iron-smelting site
Kumati (14° 41' 00"; 76° 36' 00")	Microliths; anthropomorphic megalithic burials (pl. XV), port-holed chamber tombs, hero-stones; remnants of a medieval fort

Village/Site	*Nature of remains*
Minekere (14° 42' 00"; 76° 38' 00")	Remnants of a medieval fort
Rama Durg (14° 51' 30"; 76° 33' 00")	Hero-stones, inscriptions and iron-smelting site
Shidegallu (14°48'00"; 76° 34' 30")	Paintings in rock-shelters, hero-stones, loose sculptures and iron-smelting site
Uradihalli (14° 46' 00"; 76° 38' 30")	Temples of late Chalukyan period, inscriptions, hero-stone (Vijayanagara period) and iron-smelting site.

21. EXPLORATION IN DISTRICT BELLARY

Under the village-to-village survey scheme, K.M. Suresh of the Kannada University, Hampi, assisted By C. Mahadev, Vasudev Badiger and C.S. Vasudevan, discovered the following sites of archaeological importance

Village/Site	**Nature of remains**
Hadagali taluk	
Allipura	Kallesvara Temple (later Chalukya period); Siva-*linga* and Vrishabha
Anguru	Gaddi Basavesvara (seventeenth-eighteenth century), Kallesvara Temple (later Chalukya period); *Siva-linga,* sculptures of Vishnu, Surya, Ganesa, Daksha, Brahma, Rati-Manmatha, Uma-Mahesvara and Naga
BalaHunasi	Kallesvara Temple (later Chalukya period), Siva-*linga* and Vrishabha

Village/Site	*Nature of remains*
Hadagali taluk	
Budanuru	Kallesvara Temple (later Chalukya period), Virabhadra (sixteenth-seventeenth century) Siva-*linga,* Surya, *Sapta-matrikas*, *gaja*-Lakshmi, hero-stone and Vishnu
Devagondanahalli	Kallesvara Temple (later Chalukya period), Siva-*linga,* Vrishabha, Vamana, *mudra-stone* with inscription
Hagaranuru	Kallesvara Temple, *Siva-linga,* Vrishabha, Naga, Vishnu
Haravi	Kallesvara Temple, *Siva-linga,* Vrishabha, *Sapta-matrikas,* hero-stones
Hire-Bannihatti	Ramalingesvara (later Chalukya period), Siva-*lingas,* Naga, Vrishabha, and hero-stone
Holalagundi	Jaina temple converted to Somesvara, Siddhesvara Viresvara, Murada Siddhesvara Temples (later Chalukyan period), *Siva-lingas,* Virabhadra, Vrishabha and *gaja*-Lakshmi
Holalu	Virabhadra, Gauri-Sankara, Anantasayana Vishnu, Ave-Brahma (later Chalukya period); Anjaneya Temple (Vijayanagara period); Virabhadra, hero-stone, Siva-*linga*, Ave-Siva-*linga*, Naga and Anjaneya sculptures
Hugaluru	Ramalingesvara (Rashtrakuta period); images of Vrishabha, Naga and Ganesa sculptures

Village/Site	*Nature of remains*
Hadagali taluk	
	Kallesvara, Anjaneya sculptures (Chalukya period) *Siva-linga,* Vrishabha and hero-stone
Kaganuru	Lakshminarayana and Isvara Temples; Vrishabha, Lakshmi-Narayana and *Siva-linga*
Kandagallu	Kallesvara (Rashtrakuta period), *Siva-linga,* and sculpture of Vrishabha
Katte Bennuru	Kallesvara, Naryana and Jaina Temples (later Chalukya period), *Siva-linga,* Vrishabhas and hero-stones
Kotehalu	Kallesvara Temple (later Chalukya period); Siva-*linga,* images of Ganesa, Karttikeya, *Sapta-matrikas,* Vrishabha and hero-stones
Mailara	Heggappa, Ganesa, Mailaralingesvara Temple (later Chalukya period), *Siva-linga,* images of Ganesa, Bhairava and hero-stones
Mailara KuruvattiRoad	Ganesa Temple and Ganesa
Mudenuru	Anjaneya and Devara Dasimayya Temples (sixteenth-seventeenth century), Anjaneya and Devara Dasimayya sculptures
Rajuvala	Kallesvara Temple (later Chalukya period), Uma-Mahesvara and hero-stone

Village/Site	*Nature of remains*
Hadagali taluk	
Shivalinganahalli (old village)	Kallesvara Temple (later Chalukya period), Siva-*linga,* sculptures of Vrishabha, Bhairava, Bhairavi
Shivapura	Anjaneya Temple (seventeenth-eighteenth century), sculptures of Anjaneya, Vrishabha and Siva-*linga*
Sogi	Virabhadra and Siva Temples (later Chalukya period), Virabhadra, Siva-*linga*,Vrishabha, Naga, *gaja*-Lakshmi
Tippapura	Ishvara Temple (later Chalukya period), *Siva-linga,* Ganesa, Vrishabha and hero-stones
Uttangi	Rajesvara and Srikantesvara Temples (later Chalukya) Siva-*linga* and Vrishabha
Hagari Bommana taluk	
Alaburu	Early historical and medieval Gopala-Krishna, Ramalingesvara and Isvara Temples; Gopala-Krishna, Siva-*linga* and Naga sculptures
Ambali	Anjaneya Temple, Anjaneya and hero-stones
Devara Timmalapura	Isvara Temple, Siva-*linga* and sculptures of Venkatesvara
Gaddikeri	Anjaneya (fifteenth-sixteenth century) and Anjaneya, go/a-Lakshmi
G.Kodihalli	Siva Temple (later Chalukya period), Anjaneya and Siva-*linga*

Village/Site	*Nature of remains*
Hagari Bommana taluk	
Kogali	Neolithic, Mesolithic, Megalithic, microlithic tools, grey ware, white painted black-and-red ware; Virabhadra, Jaina and Kallesvara Temples; sculptures of Virabhadra, *Siva-linga,* Tirthankara, *gaja*-Lakshmi and Mahishamardini
Magala	Mesolithic, Megalithic, early medieval/medieval, microliths; black-and-red ware, black ware, red ware; Lakshmi-Narasimha and Siva Temples (later Chalukya period); *Siva-linga,* Lakshmi-Narasimha, Ganesa, Naga and hero stones
Morigeri	Megalithic and historical periods; Kallesvara, Ramalingesvara and Male Mallesvara; Temples of Brahma, Isvara Uddi-Basavesvara (later Chalukya period), *Siva-linga,* Mahishamardini, Ganesa, Vishnu, Brahma, Vrishabha and hero-stones
Sonna	Isvara, Sollambika, Ramalingesvara Temple (later Chalukya period) and *Siva-linga*
Harapana Halli taluk	
Bagali	Mesolithic, Megalithic, early historical and medieval site; microlithic tools, burials, black-and-red ware, red and black pottery; Sangamesvara (Rashtrakuta) and Kallesvara Temples; Channa Basappa (later Chalukya period); Ishta-*linga* (Hoysala period), Virabhadra (fifteenth century), Lakshmi Narayana (later Chalukya), Male Mallesvara Jaina Temple converted to Mailaralingesvara Temple; *Siva-linga;* sculptures of Vrishabha, Vishnu, Ganesa, Bhairava, Bhairavi, Lakshmi Narayana, Surya, *Sapta-matrika*

Village/Site	Nature of remains
Harapana Halli taluk	
Bandri	Basavesvara Temple and Vrishabha
Devara Timmalapura	Venkatesvara Temple (sixteenth century); sculptures of Venkatesvara, Rangayya Doddayya, Lakshmi, Sankaracharya, Madhvacharya
Hyarada	Sangamesvara Temple, *Siva-linga,* icons of Bhairavi, Vrishabha and hero-stones
Kanahalli	Kallesvara Temple (Rashtrakuta period); Siva Temple, *Siva-linga,* images of Bhairava-Bhairavi and Vrishabha
Karikanahalli	Early, medieval and historical remains, Temple and sculpture of Anjaneya
Kulahalli	Kotturesvara and Virabhadra Temples (sixteenth-seventeenth century) and Virabhadra sculpture
Madalageri	Neolithic, Mesolithic, megalithic, early historical period; microliths, black-and-red ware, black ware and red ware; Isvara, Kallesvara and Jaina Temples (late Chalukya period), Siva-*linga,* icons of Vrishabha, Karttikeya, Lakshmi and Parsvanatha
Maiduru	Temple (eighteenth century) and sculpture of Anjaneya
Muttagi	Early historical and medieval site, Karttikeya and Isvara Temples (later Chalukya period); *Siva-linga,* Karttikeya and Anjaneya sculptures

Village/Site	*Nature of remains*
Harapana Halli taluk	
NandiBevuru	Basavesvara, Siva and Vishnu Temples; icons of Ganesa, *Seshasayi* Vishnu, Naga and Vrishabha
Nilagunda	Kallesvara and Isvara Temples; sculptures of *Anantasayana* Vishnu, Siva-//«ga, Ganesa, Vishnu and Vrishabha

22. EXPLORATION IN SHIGGON TALUK, DISTRICT DHARWAD

S.K. Potnis of the Directorate of Archaeology and Museums, Government of Karnataka, Mysore, in the course of village-to-village survey, explored the following sites of archaeological importance.

Village/Site	*Nature of remains*
AnkalaKhana	Kannada inscription of Kalyana Chalukya Vikramaditya datable to AD 1090 and a well datable to fourteenth-fifteenth century
B. Basapura	An inscription in Devanagari
B. Kananakeri	Kannada inscription of Kalyana Chalukya near the Tank-bund and a sculpture of fourteenth-fifteenth century
Bada	Hanuman Temple in dilapidated condition with inscribed hero-stone
Bannuru	Kalmesvara Temple (thirteenth-fourteenth century)
Chandapura	Basavanna Temple with Devanagari inscription and hero-stone

Village/Site	*Nature of remains*
Chikkamalluru	Hero-stone with Kannada inscription near the Dundi Basavesvara Temple; huge *nandi* pillar with Kannada inscription of Yadava Singhona (*circa AD)* 1224)
Chikkanelluru	
Gangenoor	Isvara Temple, two hero-stones and sculptures
Ganjibhavi	Ramalingesvara Temple and Lajjagauri
Ganjigatti	Kalmesvara Temple (twelfth-thirteenth century); three sculptured hero-stones
HaleBada	Ruins of Isvara Temple (fifteenth-sixteenth century) Ranganathasvamy Temple, Kalmesvara and Maruti Temples (thirteenth-fifteenth century)
Hanumarahalli	Kannada inscription and sculptures
HireBandigeri	Ruins of Kalmesvara Temple (twelfth century); Naga stones; two Kannada inscriptions of Kalyana Chalukya (AD 1126 and 1143); Kannada inscription near Kordana-*matha* of Kalyana Chalukya VikramadityaVI
Hiremalluru	Maruti and Basavanna Temples of fifteenth-sixteenth century; Kannada inscription (AD 1037)

Village/Site	Nature of remains
Hotturu	Ruined Basavanna Temple; two Kannada inscriptions of Kalyana Chalukya (AD 1037 to 1087); two Kannada inscriptions one of sixteenth-seventeenth century and the second datable to AD 1008, three inscribed hero-stones
Hulasogi	Isvara Temple in Chalukyan style and four sculptures
Hunagund	Inscription of Kalyana Chalukya Somesvara near the tank-bund and six sculptures
Jakkanakatti	Kannada inscription of fifteenth century
Kalyana	Sculptures of *Sapta-matrika* and Bhairavi (sixteenth-seventeenth century)
Kankanavada	Inscribed slab in Kannada; *gaja*-Lakshmi panel of thirteenth-fourteenth century
Khursapura	Sculpture (sixteenth-seventeenth century) and *padukas*
Kylakonda	Rashtrakuta pillars; in the premises of the Virabhadra Temple; four sculptures and two Naga stones
Motahalli	Isvara Temple with inscribed hero-stone in three panels (twelfth-thirteenth century)
Munavalli	Small Isvara Temple with inscription (eighth century); *gaja*-Lakshmi in Bas relief and pillars (twelfth-thirteenth century), hero-stone and inscriptions of Kalyana Chalukya

Villaze/Site	*Nature of remains*
Narayanapura	Basavanna Temple with Kannada Inscription (twelfth-thirteenth century) and hero-stone
Sadeshivapet	Kannda inscription near a pond, two sculptures in *Saiva-matha* (fourteenth century) and two hero-stones
Shahabagar	Hoysalesvara Temple with three inscriptions (AD 1190)

23. Excavation at Budihal, District Gulbarga

In continuation of the previous season's work (*1995-96,* pp. 40-41), K. Paddayya of the Deccan College Post-graduate and Research Institute, Pune, undertook further excavation at the Neolithic ash-mound site of Budihal. The principal objective of this season's excavation was to obtain additional structural and stratigraphical evidence for cattle-penning activity from the lower ash-mound at locality I.

For this purpose an area measuring about 744 sq m was selected. This portion of the site lay immediately to the south of Trench 8 excavated in the last season. It was part of a larger area from where the villagers had previously quarried soil for various construction activities. This digging exposed sediments varying from about a metre to 50 cm in thickness. Much of the soil was quarried away by the people, leaving behind only the bottom 15 cm to 20 cm deposit. The work during the current season basically involved excavation of the remaining deposit to understand how the Neolithic settlers prepared the landsurface when they first occupied the site.

Of the total area selected for work, an area of 366 sq m was part of the lower ash-mound used for cattle-penning. The work revealed that the Neolithic people carefully prepared sandstone surface before using it for cattle-penning. The uneven patches were filled with stone rubble and brown soil mixed with some amount of fine ash. The whole surface was made stable and even by intentional ramming.

The work also brought to light stratigraphical and sedimentary data pertaining to cattle-penning activities. Unlike the actual ash-mound area to the west which consists of nearly 4m thick deposit of vitrified ashes and decomposed cow-dung, the cattle-penning area has a thin deposit measuring only about a metre in thickness. This deposit consisted of seven thin layers or lenses of soft ash, granular ash, decomposed cow-dung and carbonaeous material, all measuring 8 cm to 20 cm in thickness. Unlike the thick and uneven layers of the actual ash-mound, these layers are horizontally spread out. They merely represent the thin left over deposits of cow-dung which, together with the dried and decayed thorny plant material used for fencing the penning area, were burnt so as to make the penning area hygenic and ready for the next episode of cattle-penning. It is important to note here that open air pens with hard surface and a thorny fence

Plate XVI



Kanaganahalli : mahastupa, western entrance after excavation

around are still commonly used in the area for penning sheep/goat and cattle.

The remaining area of 378 sq m formed part of the human settlement. The deposit here consisted of typical greyish habitation soil. Cultural material comprising pottery, chert blades and other stone tools and animal bones were found scattered all over the area. The clearance work also exposed remnant floor patches belonging to dwelling structures. In particular, attention may be drawn to two spots where remains of circular or oval huts (each measuring 4 to 5 m across) were found in the form of clay or ash-floors, rubber-stones, chert blades, quern pieces and faunal material.

24. Excavation at Kanaganahalli, District Gulbarga

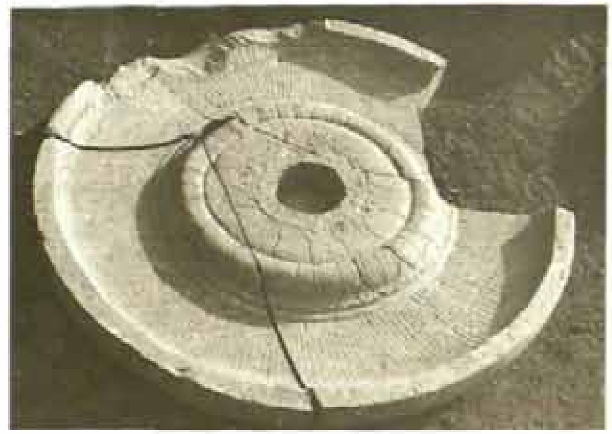
In continuation of trial-excavation carried out earlier (*1994-95,* pp. 37-39), the Bangalore Circle of the Survey, under K.P.Poonacha, assisted by T.M.Keshava, M.V.Visweswara, C.S.Seshadri and Meghraj Hadpad, took up large-scale excavation towards east, west, south-east and south-west of the Stupa that has been partly exposed earlier. One 'L' shaped trench in the north-south and east-west running arms of the core of the stupa was also laid to know the nature of core filling and the possibility of finding the reliquary.

The excavation in the east, west and south at cardinal directions has brought to light offset entrances provided with *chandrasila* (pl. XVI). At the western and southern entrances a pedestal (obviously to accommodate the sculpture of Yaksha) is encountered. The railing of the stupa is placed 3.95 m away from the *medhi,* has equidistantly placed uprights 45 cm away from one another. These uprights have a plain interior surface and are treated with fully blown lotus medallions on the exterior. These uprights have lenticular sockets of 38 cm length to accommodate *suchis* of lenticular cross section, on their lateral sides; four on each side provided with inter space of 8 cm. There are also corner uprights with sockets on two sides on either side of the entrances. The *suchis* of 45 cm length are shown with fully bloomed lotus medallions at the exterior, projected slightly away from the lenticular body with sufficient uncarved lateral edges to fit into the sockets of the verticals. The verticals are held in position by a converse *ushnisa* or coping, which is also decorated meticulously with animal and floral motifs. The *pradakshinapatha* all along the stupa is disturbed at places and is found laid between the inner edge of the railings and the outer edge of the lower *medhi* with more or less uniform square or rectangular slabs. *The pradakshinapatha* is found choked with disturbed members of the *ayaka* platforms, the collapsed railing parts, heavily leaning *medhi* slabs and collapsed upper *medhi* and *anda* units. The stupa extent upto the lower *medhi* level had huge sculptural panels depicting the *dharma-chakra,* stupa models, and *Simhasana, Bodhi-vriksha* and *Muchilinda naga* as encasing members. Each panel positioned with edge-to-edge locking system stands to a height of 1.20 m with a width of 1.20 m, is decorated with a slender pilaster at the borders, which have the symbol of stupa, tree in railing and elegant sculptures of female *chauri*-bearers. Some of these are *in situ* at south, east and west. It is disturbed in the other directions exposing the core of the lower *medhi.* The *medhi* is built of dressed limestone members with lime-mortar as the binding material. In the cardinal directions, i.e., east, west and south, the lower *medhi* has projections, rather *ayaka* platforms corresponding to the entrances, which measured 3.20 m x 2.60 m x 1.50 m. The *ayaka* platform especially at west have exquisite rendering of *Muchilinda naga, dharma-chakra* and *Bodhi-vriksha.* Some of these sculptured panels are

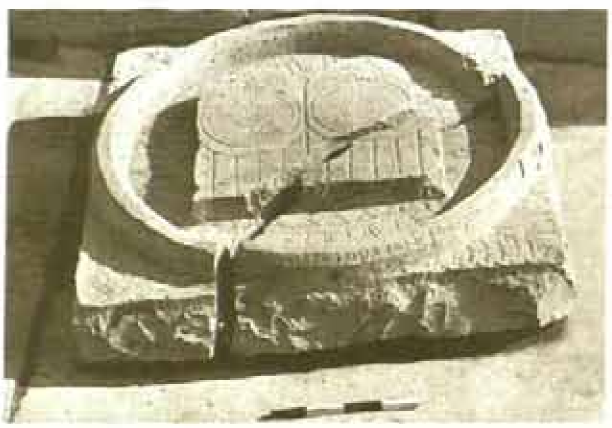
Plate XVII



A



C



B



D

Kanaganahalli : A, *standing Buddha, western ayaka, mahastupa;* B, *Buddhapada;* C, *chhattra and* D, *seated Buddha*

inscribed in Brahmi characters of first to third century AD, recording the donations made from a trader to a commoner. The *ayaka* platform on the south and west has accommodated a colossal standing sculpture of Buddha over a pedestal (pl. XVII A). The *ayaka* platform on the east had accommodated a sculpture of seated Buddha and fluted *ayaka* pillars. The *ayaka* platforms were veneered with sculptured friezes narrating the events pertaining to the life of Buddha *viz.,* the birth, the great renunciation, the enlightenment, the first sermon and the *parinirvana.*

There is an offset 75 cm above the lower *medhi* over which the upper *medhi* rises. The upper *medhi* extends only at few places. The upper *medhi* has sculptured panels having a height of 2.80 m and a width of 1.20 m. These panels are leaning on the *anda* and are held in position by a collar and a cornice at the bottom. The cornice has a fluted top surface containing inscription. The front surface is decorated with railing motifs. Only a few mutilated upper *medhi* slabs are *in situ.* Most of these sculptured slabs are mutilated into several fragments and fallen on the *pradakshinapatha* along with *anda* members and cornices. These upper *medhi* slabs interlocked similar to lower *medhi* slabs are carved in three panels and are magnificently treated with key events of a popular *jataka* like *Vidhurapandita jataka, Kapi jataka, Vesantara jataka* and *Sanjiniya jataka.* Most of these *jatakas* have label inscriptions assignable to *circa* first-second century AD.

The *anda,* and *chhatra* part of the stupa is disturbed in its elevation. The architectural members are found scattered all over the *pradakshinapatha* and beyond the railing.

During excavation, many *Buddha-padas* (pl.XVII B), fragments of *chhatras* (pl. XVII C), cornice slabs, coping members, animal friezes, three seated sculptures of Buddha (pl. XVII D) and many sculptured friezes are recovered.

As many as fifty inscriptions are found from different architectural units of the stupa right from the railing to the *medhi* slabs. Almost all the inscriptions are donatory in nature and two distinct palaeographic chronology could be tentatively assigned.

Apart from the inscriptions and architectural members, eighteen lead coins, all of Satavahana period were retrieved. Most of them belong to the reign period of Sri Satakarni. Further work is in progress to expose the stupa completely and to study its articulations *vis-a-vis* the epigraphical and numismatic evidences.

25. Exploration in District Gulbarga

K.Paddayya of the Deccan College Post-graduate and Research Institute, Pune, in continuation of his prolonged Lower Palaeolithic research in the Hunsgi Valley, District Gulbarga, carried out intensive geoarchaeological investigations at the Acheulian site of Isampur (Lat. 16°30'N; Long. 76°29'E). This season's fieldwork brought to light fresh evidence regarding geoarchaeological context and functional affiliations of the site.

The site lies about a kilometre away from the shale-limestone plateau edge and about a quarter kilometre away from the Kamta Halla, one of the feeders of the Hunsgi *nala.* It is situated on the limestone pediment surface covered with 1.5 m to 2 m thick brown kankary silt, which is in turn overlain by 1 m to 1.5 m thick black soil. The tool-bearing horizon was exposed because of soil quarrying activities and also erosion caused by field channels. The site covers an oval-shaped patch

measuring about 40 m across. A large number of limestone artefacts comprising cores, massive flakes, waste flakes and hammerstones were found scattered all over the area.

Two test pits were excavated and Test Pit 1 (3 sq m in extent) revealed the following stratigraphy: layer (1) sticky blackish silt (10 cm to 15 cm); layer (2) thin colluvial gravel lens yielding Middle Palaeolithic artefacts (5 cm to 8 cm); layer (3) Acheulian horizon (20 cm to 25 cm) comprising about 200 fresh artefacts and layer (4) limestone bed-rock.

From the fresh nature of artefacts and presence of a large number of cores and debitage material, it is very clear that the Acheulian cultural material is in its primary context. Further, from the small number of finished artefacts and the preponderance of cores and flakes, it would seem that this spot served as a quarry from where limestone blocks, forming part of the bed-rock, were pulled out and used for preparing block-outs which could be transported to occupation sites for being transformed into regular tools. It is probably for the first time a quarry site of this kind has been found in the context of the Indian Lower Palaeolithic culture in India.

26. Exploration in District South Kanaka

H.T.Talwar of the Directorate of Archaeology and Museums, Government of Karnataka, Mysore, noticed during the course of his exploration, the following sites in the Mangalore Thermal Plant area in Udupi taluk, District South Kanara.

Site	*Nature of remains*
Baramudi	Subrahmanyam Temple and sculpture (sixteenth century)
Nandikur	Durgaparamesvari Temple (*circa* tenth century) and sculpture of Durga (sixteenth century)
Palimaru	Mahalingesvara and Gopalakrishna Temples; sculpture of Ganesa, Janardana, Nandi and Siva-linga (sixteenth century) and inscription of Vijayanagara period

KERALA

27. Excavation at Kunnukara, District Ernakui am

The Director of Archaeology, Government of Kerala, Thiruvananthapuram, conducted a trial-excavation at Kunnukara (Kunnu-Kara—a hillock and a land). This protohistoric site 12.20 m above sea level is situated 8 km north-west of Alway. The site lies on the low sloping laterite formation and is 2 km west of Manjalilake - a tributary of River Periyar. The laterite formation is dark brown and soft at the

top level, while it is reddish and hard at the lower level. While removing the laterite soil, a group of urn-burials were exposed, resulting in the discovery of fourteen iron implements comprising wedges, swords and knives. Pottery from the site consists of huge urns (h. 90-95 cm, dia. lm) and medium-sized jars.

28. Excavation at Edakkal Cave, Ambalavayal, District Wynadu

Wynadu, one of the fourteen districts in Kerala is situated in an elevated picturesque mountainous plateau in the Western Ghats. It lies between 11°26'H" and 11°48'22"N and 75°46'38" and 76°26'11"E.

Historians are of the view that organized human life existed in these parts at least ten centuries before Christ. Plenty of evidences of the New Stone Age can be seen among the hills of Wynadu, especially at Edakkal Caves.

The Edakkal Caves are at Ambukutti Mala near Ambalavayal in Nenmeni village of Sulthan Batheri taluk of District Wynadu. Ambukutti Mala is at 12 km south of Sulthan Bathery. The ancient carvings in the natural caves at Edakkal, speak of highly civilized people of pre-historic ages and inspire the archaeologists and historians to rewrite the history of Wynadu.

The excavations conducted by the State Archaeological Department, Government of Kerala, in the upper cave at Edakkal, revealed a round shaped hard granite stone implement, along with pieces of charcoal and fragments of pottery.

Besides, the Upper Cave of Edakkal revealed a series of paintings on the walls of the caves.

These comprise Sun and magical symbols, human figures (female), animal figures, motifs of flora and fauna, cart with wheels, etc.

In addition to the above, some inscriptions on the eastern wall and one inscription on the western wall of the Edakkal Cave, were also noticed.

In short it appears that the inscriptions of Edakkal Cave were inscribed in different ages from third to fifth century, after the decline of early Kurumbas. These people settled there from 600 BC to the second century, posterior to which the Buddhists and Jaina people used the cave as their religious centre.

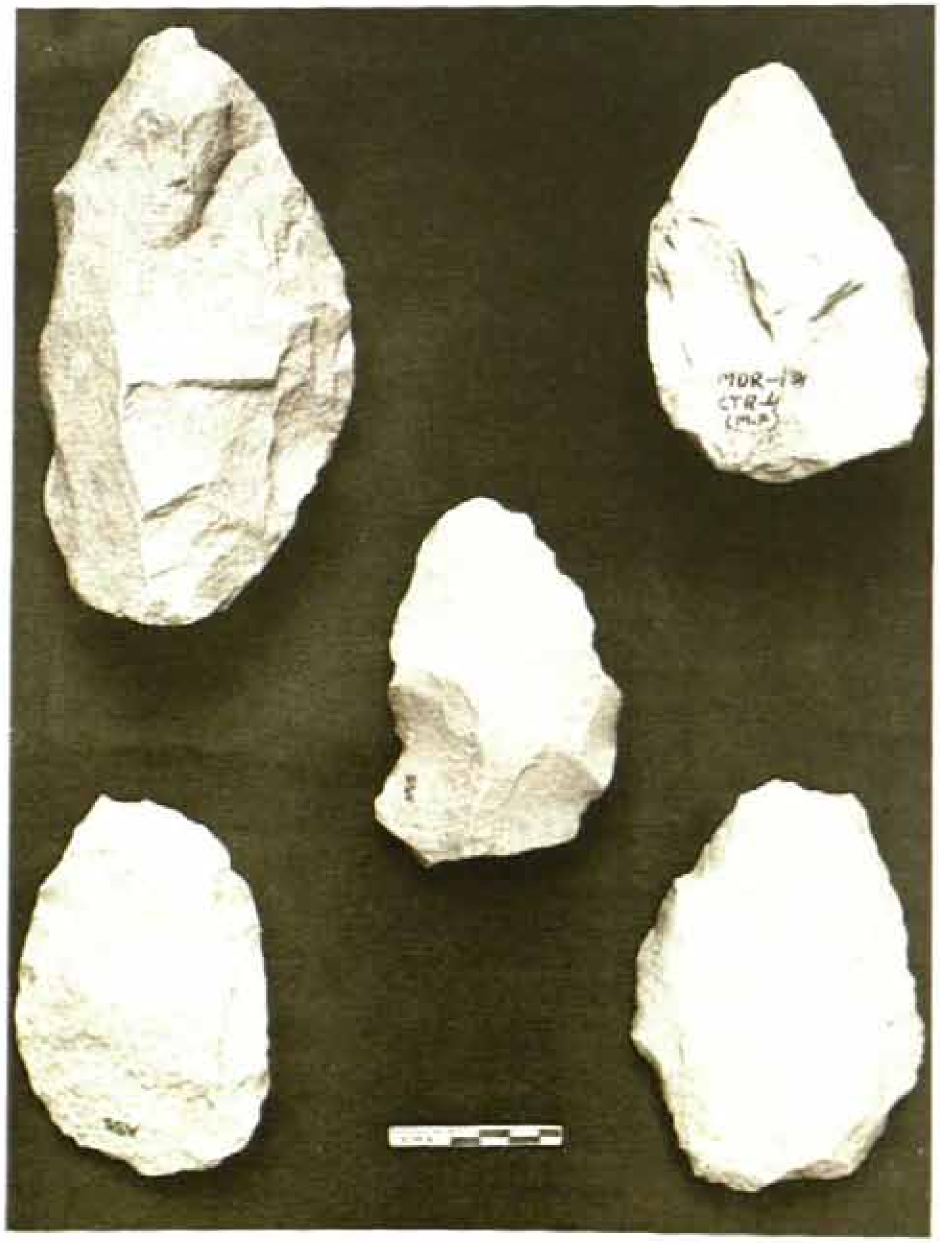
There were more than three hundred megalithic monuments noticed and identified in the foothills of Edakkal Cave itself mainly represented by cist-burials. Most of the caves are used by the migrants of Wynadu for their plantation and house construction.

MADHYA PRADESH

29. Exploration near Kerwa Dam, Bhopal, District Bhopal

Archaeological explorations were carried out on the hillocks, lakes and lake valleys near Kerwa Dam, Mendauri and Neelbud near Bhopal by the Department of Ancient History, Culture and Archaeology, University of Allahabad, Allahabad. The archaeological team consisted of S.C. Bhattacharya, V.D. Misra, J.N. Pal, Prakash Sinha and M.C. Gupta assisted by L.K. Tewari, Rajendra Prasad and Sharad Suman. During this exploration several localities of primary context sites of Acheulian, Middle Palaeolithic and Mesolithic cultures were located. Distribution pattern of artefacts on primary context sites was recorded and the nature of geological formation was studied. Plottings were done to know the nature of colluvial deposits on the banks of the lake.

Plate XVIII



Sharda Vihar : Lower Palaeolithic lithic assemblage

The ridge of Sharda Vihar-2, west of the road and school campus, SV2 (77 °21' 3"; 23°11’0”) is flat on the top but sloping on northern and southern sides. On the northern slope of the ridge, some digging was done for the construction of building material, as a result of which there was exposure of old formation.

On the base, there was a *murram* deposit, capped by a boulder bed containing rounded boulders, medium to small-sized boulders, flakes, etc. This boulder was full of quartzite blocks of various sizes. A few Lower Palaeolithic artefacts like cleavers, handaxes, flakes, etc., were found behind the administrative block of the school. Further explorations in the area revealed that the road in front of Acharya Prashikshan Kendra was full of Lower Palaeolithic artefacts. This was due to the fact that the material used for building the road—*murram* and boulder were obtained from the south of the existing building. In fact from the foot of the building, the casual exploration revealed that the boulder bed under discussion contained Lower Palaeolithic artefacts. This boulder bed was capped with yellowish loamy soil or hill wash. This stratigraphy was also observed on the other side of Bhopal-Kerwa Road where on account of digging for *murram,* sections have been exposed at many places. The bed-rock is also exposed. In this area it was observed that the geological units comprised from bottom to top: i) Weathered shale, ii) Boulder bed and iii) Yellowish deposit, probably hill wash.

In this area also, the boulder bed yielded Lower Palaeolithic artefacts. This occurrence of the Lower Palaeolithic tools in the area indicated that if a planned exploration was carried out, significant information could be obtained regarding the Lower Palaeolithic culture around Bhopal in general and around Sharda Vihar campus in particular. With this point in view, the present expedition was organized. Explorations carried out in this area confirmed the earlier observation regarding the occurrence of Lower Palaeolithic artefacts in Sharda Vihar campus. The stratigraphy as indicated earlier was also confirmed. It was revealed that the boulder bed was the colluvial deposit. The exploration in the area led to the discovery of a number of sites described below, ranging from Lower Palaeolithic to Mesolithic period.

Sharda Vihar (SV1) 77° 21' 45"; 23° 11' 0" (east of the road along with water tank) is located to the left of Bhopal-Kerwa Road and east of the Sharda Vihar campus. It is a primary context factory site where cores, flakes, debitage and finished tools are found in an extensive area right from the neck of the hillock upto the road in the west. Artefacts are often found in clusters, indicating that the Lower Palaeolithic man manufactured the tools at different spots. The lithic assemblage comprise cores, flakes, handaxes, cleavers, scrapers, etc., fashioned on quartzite and sandstone (pl. XVIII). As these artefacts (pl. XIX A) are found almost in the area of their manufacture they have undergone only the weathering impact; generally the tools are in mint condition.

Mendauri (MDR1) Lat. 77° 21' 5"; Long. 23° 10' 55" (west of school campus), is located to the west of Sharda Vihar campus and it runs up to the margin of the depression lying to the west. This area is now under cultivation but the cultivated fields are full of stone pieces. An exploration in the area resulted in the discovery of Middle Palaeolithic artefacts fashioned on quartzite (pl. XIX B). The cultivated fields under discussion are of black soil full of cracks but it becomes sticky in contact with water. The occurrence of Lower Palaeolithic tools on higher level in this area and those of Middle Palaeolithic from the lower level is noteworthy.

Plate XIX



A



B



C

Sharda Vihar : A, *Lower Palaeolithic artefacts;* B, *Mendauri; Middle Palaeolithic tools and* C, *Amil Koni: decorated potsherds*

Mendauri (MDR2) 77° 21'45"; 23° 10'35" (south of Sharda Vihar school campus near lake area), is the southern slope of Sharda Vihar ridge. The lower portion of this is presently covered with bamboo plantation. Exploration in the area led to the discovery of Lower and Middle Palaeolithic artefacts. These tools are in mint condition and are fashioned on quartzite and sandstone. For manufacturing the Middle Palaeolithic artefacts fine-grained quartzite has been preferred. The nature of the industry clearly indicates that these artefacts were locally manufactured. The sandstone artefacts exhibit weathered appearance while those fashioned on quartzite are generally fresh.

The occurrence of the Lower and Middle Palaeolithic industry on the southern slope of Sharda Vihar indicates that barring the central and higher portion of the ridge both the slopes of ridges are characterized by the occurrence of stone artefacts.

To the south of the slope of Sharda Vihar (SSV) 77° 21' 50"; 23° 10' 30"ridge, there is a low-lying area, characterized by black cotton soil. The southern end of this part of the lake is demarcated by a low lying ridge abutting the lake (Kerwa Dam lake) while the northern margin is marked by the toe of the Sharda Vihar ridge. While the Sharda Vihar ridge is composed of sandstone, the basalt boulder characterizes the southern ridge. The lake-bed in question yielded Middle Palaeolithic artefacts comprising cores, flakes and tools. The assemblage is fashioned on fine-grained quartzite. Some of the artefacts found in this area might have sloped down from Sharda Vihar ridge while some from the other side. But the area itself was the zone of activity of Middle Palaeolithic man as is evident from the mint fresh artefacts of different sizes.

Towards the northern side of the area there was higher concentration of artefacts and therefore an area of 30 m x 50 m was taken up in 1 m x 1 m squares, and artefacts were plotted to ascertain their distribution pattern.

A small trial-trench (2 m x 2 m) was also laid out in the south-east corner of gridded area, almost in the centre of the site to ascertain the depth at which the artefacts could be found. These were found upto the depth of 70 cm. The excavation revealed only the sticky black cotton soil upto the depth of 1.50 cm. As shown in other areas of recent digging, it is a thick formation of several meters in the lake-bed.

The artefacts were mostly fashioned on quartzite. However, a few pieces of basalt resemble the Middle Palaeolithic artefacts. It is not unlikely that the Middle Palaeolithic artefacts were fashioned occasionally on basalt as well. But as this rock is more prone to weathering such tools are heavily weathered.

Kerwa (KRW2) Lat. 77° 21' 55"; Long.23° 10' 10" (opposite KRW1, in the centre of the lake). There are two small and low lying ridges abutting the lake on the south. These ridges are characterized by basalt boulders. During the exploration, the eastern ridge yielded microliths and Middle Palaeolithic artefacts, the latter fashioned on quartzite and occasionally on sandstone. The microliths are not in good number suggesting that the area was not frequently visited by the megalithic people. However, the Middle Palaeolithic artefacts were found in good number and generally in mint fresh condition thereby suggesting the area being frequently visited by Middle Palaeolithic man and that these were locally manufactured.

On the southern slope of these ridges abutting the lake, stone-circles characterized by basalt boulders

were noticed. On enquiry from the local people, it was known that as per local custom, the dead children are buried and the burial spot is covered with boulders so that the dead body might not be disturbed by animals. This practice may be a survival of the megalithic tradition in the area, though in restricted way, as this type of burial is confined only to children.

Kerwa (KRW1) 77° 22' 10"; 23° 10' 5" is located to the east of the Bhopal-Kerwa Road near the house of Abdul Wahid Khan, a contractor of Bhopal. The exploration team followed a track used for carrying *murram.* The exploration resulted in the discovery of Lower and Middle Palaeolithic artefacts fashioned on quartzite and sandstone. It was also found that as in the case of Sharda Vihar 1, the area dug for obtaining *murram* has exposed a section comprising *murram* bed at the base; boulder bed capping the *murram* bed and loam or hill wash deposit.

Near the Kerwa Dam the section revealed that the so called *murram* bed is in fact the disintegration of shale-rock formation.

Exploration in this area indicates that on the southern side, the Lower and Middle Palaeolithic people have made their presence felt through their artefacts upto the bank of the Kerwa.

Mendauri (MDR-T) Lat. 77° 21' 10" E; Long. 23° 11' 3 " N; is located to the north of Sharda Vihar ridge. This ridge is also an extension of the main hillock. The area was explored with a view to ascertaining the occurrence or non-occurrence of Lower/Middle Palaeolithic artefacts. It was argued that if Sharda Vihar ridge was visited by the Lower Palaeolithic man why not the temple ridge? The exploration resulted in the discovery of Lower and Middle Palaeolithic artefacts on the ridge. With a view to ascertaining the occurrence or the non-occurrence of artefacts in the field under cultivation lying at the base of the temple ridge, exploration was conducted in the fields. It was found, as in the case of MDR-1, MDR-T also yielded Middle Palaeolithic artefacts. The available evidence suggests that the entire area between the Sharda Vihar ridge on the south and the Temple ridge on the north was operated upon by the Middle Palaeolithic man.

Neelbad (NBD) 77° 21' 0"; 23° 11' 30" is located at a distance of about 11 km from Bhopal to the east of the Bhopal-Sehor Road and north-east of Hindustan Petroleum Gas Store. The area was explored to ascertain whether this area was also visited by Lower/Middle Palaeolithic man or not, because this was the part of ridge which was across the lake towards west and south. This curiosity arose because the three sites of Sharda Vihar valley, southern, eastern and northern, were characterized by the Lower/Middle Palaeolithic artefacts.

The exploration resulted in the discovery of Middle Palaeolithic artefacts on quartzite and occasionally on sandstone. It is to be noted that the area is marked by basalt boulder. The quartzite pieces were brought from outside by the Middle Palaeolithic man. The assemblage is characterized by freshness. The artefacts are in mint condition. It may also be noted that no Lower Palaeolithic artefact was found in this area.

Barkheri (BKR) a Middle Palaeolithic primary context factory site, located in District Sagar on both sides of Sagar-Bhopal Road at a distance of 32 km from Sagar is on a low rocky surface near a *nala* which separates the site from a low lying ridge. The Middle Palaeolithic artefacts fashioned on quartzite were collected here. The site is littered with broken pieces of quartz pebbles.

30. EXPLORATION IN DISTRICT MANDLA

The Department of Ancient Indian History, Culture and Archaeology of the H.S. Gour University, Sagar, conducted explorations in Mandla, under the direction of V.D. Jha, assisted by K.K. Tripathi and P.K. Shukla.

Located between Lat. 22° 12' N to 23° 22' N; Long. 80° 18'E to 81° 50' E, the district comprises an area of 13257 sq km. The wild hilly district, interspersed with spurs of the Satpura and the Naga hills, lies in catchment of River Narmada and is full of valleys of the River Banjar, Burhner, Kharamer and a number of small streams. Out of the five tehsils only Mandla, Nainpur and Dindori have been explored. Base camps, factory sites and artefacts of Stone Ages; early medieval stupas; medieval shrines, sculptures and water reservoirs have been brought to light.

Lower Palaeolithic artefacts on sandstone, quartzite, chert and dolerite have been noticed at Ghudawamada, Deora, Fonk, Phitari, Medha, Kosamghat, Sijhora and Piparia. Excepting Deora and Ghudawamada, the tools have been collected from the river bed. At Deora tools have been found in cluster on the surface around a small hillock near River Narmada. The accompanying unfinished implements, hammerstone and cortexed tools exhibit that Deora served as a work camp.

Ghudawamada Cave, located on the midway of a higher hill, covered with dense forest served as a base camp. A streamlet flowing near the cave and River Silgi, 4 km from the cave, fulfilled the needs of the Stone Age man. Ecologically, the Ghudawamada region is ideal for supporting hunting-gathering people. Lower and Middle Palaeolithic implements, both finished and unfinished, chips, chunks and a huge retouched chert block *in situ* (measuring 86 x 34 cm) have been noticed. About 2 m thick soil deposition within this 160 m long and 62 m wide cave needs systematic excavations.

The artefacts include handaxe, chopper, chopping tool, cleaver, scraper and hammerstone.

Middle Stone Age implements were collected from Ghudawamada, Deora, Raipura, Piparia, Limrua, Phitari, Kosamghat, Dagona and Banjara. The former two appear to be factory sites. The tool-kit includes scraper, handaxe, point and hammerstone.

The Upper Palaeolithic settlements were noticed at Kudwan, Raipura, Umaria, Sakawah Kalan, Limrua, Chatua, Andai and Lafra. All these sites are located at the foot of the hillocks with abundant resources of water and plants, and are on the level higher than the formations made by the rivers and streamlets. These are the open air sites. Every site yielded lumps of raw material, waste products, finished and unfinished tools. Seventy-one stone-paved circular floors having unhewn blocks at the periphery, covering an area of about 2 sq km, have been noticed at Sakwah Kalan. Thirty-four such floors, extending in an area of more than a kilometer were discovered at Andai, whereas Kudwan revealed thirty-nine such floors. The stone-paved floors near a natural lake at Chatua was almost destroyed by human activities associated particularly with agriculture. The settlements at Limrua, Raipura, Lafra and Umaria are also on the verge of extinction. Handaxe, point, perforator, blade, burin, scraper, pick, chisel, arrow tip, knife, crescent, hammerstone on jasper, agate, chalcedony, quartz and fine quartzite formed the tool-kit. Deora, Ghudawamada, Sailwar, Phitari, Singhpur, Bilgaon Mai, Dagona, Bhimrundan, Mohti, Hirdenagar and Patangarh also yielded artefacts.

The mesolithic tools including arrow-head, blade, scraper, blade-core, burin, chisel, point, knife and crescent were picked up from Piparia, Raipura, Sakwah Kalan, Sailwar, Chatua, Lafra, Umaria, Limrua, Singhpur, Bhimrundhan, Jhanki, Sitaraptan, Karanjia, Chauradadar, Sonatirath, Kisalpuri, Kakaiya, Kukurramath, Khamarkhudra and Hirdenagar. Stone-block with graffiti marks have been noticed at village Sarwahi. The site yielded unfinished Neolithic implements also.

Two devastated brick-stupas assignable to *circa* first century were noticed. The stupa located on the eastern corner of the village in a locality known as Andhiari Jhapa was initially built during *circa* first century and was renovated later. The existing height of the structure is 2.30 m which contains forty courses ofbricks. Another stupa, noticed at Khursipura locality on the western corner of the village, has a circumference of 15.10 m at the base.

The only intact medieval temple in the region explored is at Kukarramath. Another temple renovated during the present century is located at Singhpur. In addition to these, remains of medieval temples have been noticed at Tantargaon, Bajag Padaria, Khamhi, Mohti, Karanjia, Sonatirath, Khamharkhudra, Sailwar, Patangarh, Dhanoli, Kisalpuri, Bhalwara, Mahandwani, Padmi, Hirdenagar, Jhulpur, Umaria, Dei and Bhima. All these shrines are made of local stone.

Medieval sculptures of Brahmanical deities including Saiva, Vaishnava, Saura, Brahma and Sakta pantheons have been discovered at above mentioned sites. In addition to these, the icons of Brahmanical deities have also been noticed at Mandla town, Kakaiya, Bilgaon, Sakka, Deogaon and Purwa. Icons of Jaina Tirthankara have been noticed at Kukarramath only. An icon of five-headed, ten-armed Hanuman yeilding mace in his front left hand, fashioned during the twelfth-thirteenth century AD is also noteworthy. The image is enshrined in a small modern platform at Samnapur.

Small tank (12.50 m east-west and 14.20 m north-south) lined with dressed stone- blocks and a flight of five steps was built at Sonatirath near the temple site during the tenth century AD. Another water reservoir of eleventh century AD lined with chiselled stone-blocks, has been noticed near the temple site at Sailwar.

31. Excavation at Kutwar, District Morena

In continuation of the last year's work (*1995-96,* p.47), the Bhopal Circle of the Survey, under the direction of A.K. Sinha, assisted by Narayan Vyas, Manuel Joseph, K.K. Rai, Nitin Shrivastava, Virendra Singh and Sanjay Shrivastava, resumed excavations at KTR-3 and KTR-4. KTR-4 is located on a flat terrain in the outskirts of the village. KTR-4 is located on the right bank of Asan river. In KTR-3 from bottom upwards, Period-I was represented by a pre-PGW stratum identifiable with black-and-red ware, black-slipped ware and dull wares with cord impressions, hi the limited area excavated at the depth only a few random post-holes could be identified. On examination of the natural soil the amelioration of aridity, which served as an impetus for the earliest settlers could be understood by the superimposition of lacustrine sediments on the semi-arid sandy calcretion layer. In Period-II the continuation of the above mentioned pottery along with the PGW, shows continuity. A large number of post-holes, frequent burning activity besides crude iron objects, were also observed. Significantly, NBPW which forms the hallmark pottery of Period-Ill is found from the middle of Period-II. However, Period- III is delineated by

the absence of PGW. Whereas the black-and-red ware, black-slipped ware continue. This period inclusive of the Mauryan deposit therefore, contains red wares with loop-handle, lug-handle and round collared-rim with lip. Houses were made of stones, bound by mud-mortar. Wattle-and-daub residential structures were also observed.

In Period IV besides the obvious changes in pottery from the Sunga to Kushan stratum, the sudden disappearance of black-and-red ware, black-slipped ware is noteworthy. The structural activity continued in stone although wattle-and- daub houses were also common. In the early part of this period, the village was engulfed by a conflagration as seen by burnt wattle-and-daub walls noticed in KTR-3 and KTR-4. The Period V has yielded Gupta period remains, prominent among them are sealings, sprinklers and beads at KTR-3, the habitational endeavours were again taken up only in the medieval period when isolated hutments in stone were made.

KTR-4 has also the same sequence of culture. In Period I however, the strata yielded a few microlithic blades and debitage. Also remarkable in Period III strata is the finding of mud-bricks and greater density of ring-wells compared to KTR-3. In KTR-4 the Period VI is very vibrantly marked by the presence of stone and lime-mortar structures. The floor and the walls were also plastered with lime. Pieces of glazed ware besides Ming blue and white porcelain was also found. In this site from Period III onwards a large number of bone points and iron objects were found. Beads and bangles in diverse material increase in number in the later cultures.

Excavation at Surya Tekri was also taken up keeping in view the local legend that Pandava's mother Kunti had invited the Sun god at this spot. However, it could be affirmed on the basis of the pottery and antiquities mainly comprising broken terracotta figurines and beads that the structure might have been built not earlier than the fourth-fifth century.

32. Excavation at Sanchi, District Raisen

In continuation of the last year's work (*1995-96,* pp.47-48), the Bhopal Circle of the Survey, under the direction of A.K. Sinha, assisted by Narayan Vyas, D. Dayalan, Rekha Radha Ballabhi, R.K. Shrivastava, K.K. Rai, C.K. Bhanarkar, resumed excavation on the south-east of Structure No.8. It continued to expose the extension on the south and the west. The excavation revealed that the area had witnessed the structural activities in brick between *circa* first century to fourth-fifth century AD as three monastic-complexes were exposed one above the other. These structures were mainly built of hammer dressed-stones in mud-mortar. Interestingly, one punch-marked coin, one hundred and seventy-six silver coins in a hoard of Saka-Kshatrapas and three pre-Mughal copper coins were found from different levels, besides terracotta beads, iron nails, clamps and other minor antiquities.

33. Excavation at Satdhara, District Raisen

In continuation of the last year's work {*1995-96,* pp.48-50), the Bhopal Circle of the Survey, under the direction of A.K. Sinha, assisted by Narayan Vyas, Manuel Joseph, A.K. Soni, R.K. Shrivastava, K.K. Rai, Jagdish Prashad, O.B. Khobragade, C.K. Bhanarkar and S.K. Verma, resumed excavation around Stupa 1, besides Stupas 4, 6 and 7. On excavating the layers contemporary to the stone *medhi* upto the bed-rock, the constructional history of the stupa came to light. The earliest is a brick stupa with a path of one or two courses, depending on the surface undulations. Later, the stone *anda* of the enlarged stupa was built over this *pradakshina-*

patha. The sequence of layers besides the non-interlocking of the *anda* with the berm architectural members shows that the latter was built after a passage of time. Above the working level coeval with that of brick stupa, a well-defined layer of brickbats sloping away form the stupa indicates towards destruction by human agency after which the stone encasement was done. Pieces of elephant figure with Mauryan polish was found within the filling of the stone casing, again indicating towards destruction at the site prior to renewed construction.

The pottery collected may safely be bracketed chronologically between second and first century BC. The excavation at Stupas 4, 6 and 7 indicated that these were built on a platform by arranging boulders one above the other to maintain a level. All the three stupas, as per the indications available, have *medhi* and *pradakshinapatha* around.

34. EXPLORATION IN DISTRICT REWA

The team of archaeologists from the Allahabad University consisting of V.D. Misra, J.N. Pal, Ramakant Singh, Rajendra Prasad, Sharad Suman and Arvind Malviya conducted exploration in Teonthar sub-division of District Rewa and discovered an important early historical site at Amil Koni(Long. 81° 40' 12"E;Lat. 25° 30'00" N) on the right bank of the Tons river. The site is at a distance of 57 km south from Allahabad. It is an oblong mound with maximum height of about 14 m from surrounding area. The longer axis of the mound is from north-to-south (about 300 m and shorter axis from east-to-west (about 150 m). Spread over about 12 acre area, the basal portion of the mound on the southern side has heavy concentration of early NBPW potsherds. A good number of NBPW and associated ceramics were collected from the site. Some painted NBPW sherds of convex-sided deep bowl were also collected. The NBPW assemblage comprised different shades—steel grey, blue, orange, tan, silver, buff etc. A few sherds in double colour were also found. Among other shapes mention may be made of lid in NBPW, and basin with externally collared concave neck, and vase with externally thickened rim in red ware. Some pottery disc of NBPW were also found. Some grey and black-and-red ware sherds were also collected from the site.

Major collection comprised red ware jar, convex-sided dish, shallow bowls, footed and perforated basin with white substance in the base, shallow basin with internally bevelled-rim, shallow basin with externally thickened/collared-rim, basin with sloping-rim characterized by an external ridge at the shoulder, cooking vessels with sharply carinated and angular rim, constricted neck and wide mouth; a few with soot marks at the base; miniature vase or tumbler with applique notched designs around waist, miniature vase with externally beaded-rim, pans with marked carination at the belly with sagger to round base, medium-sized vases with concave neck and externally beaded, clubbed or collared-rim, large-sized storage-jars with nail-headed externally clubbed or collared-rim, marked by concavity on the interior; storage-jars with high concave neck distinguished by marked external grooves or ridges; lid with central buttoned- knob; pear-shaped vase with externally collarred-rim. A few pieces of storage-jars or basin with ripple mark and rusticated external surface and applique decoration consisting of rope or chain pattern and cord impression were also found (pl. XIX C). Among other antiquities, mention may be made of animal terracotta figurines, fragments of soapstone casket and stone-muller, iron slags, ochre pieces and stone beads.

MAHARASHTRA

35. EXPLORATION IN AMRAVATI AND YEOTMAL TALUKS, DISTRICT AMRAVATI

D.N. Sinha of the Aurangabad Circle of the Survey, during the course of exploration of submergence area under Bembla River Ecological Project, noticed antiquarian remains at the following places.

District	*Taluk*	*Village/Site*	*Nature of remains*
Amravati	Chandur	Ghuikhed	Samadhi temple assignable to *circa* nineteenth century
-do-	-do-	TalegaonDashasar	Sculptures and architectural fragments of temple, stepped-wells, etc. of Yadava period
-do-	-do-	Yerad	Mud-bastion of late medieval period
Yeotmal	Babhulgaon	Dabha	Small mud-bastion of late medieval period
-do-	-do-	Pahur	Keshava Temple, containing beautiful loose sculpture of Vishnu, assginable to twelfth century
-do-	-do-	Pimpalkhunta	Mudgalesvara Temple of fourteenth century (Yadava period)

36. EXPLORATION IN DISTRICT AMRAVATI AND WARDHA

In the course of exploration in the area of submergence of the lower Wardha River Project, N.C. Prakash, of the Excavation Branch-I, Nagpur, of the Survey, noticed the following antiquarian remains.

Taluk	Site/Village	*Nature of remains*
District Amravati		
Chandur	Nimboli (20° 48' 00" N; 78° 14'00"E)	Early historical and medieval remains; black burnished, red-slipped, micaceous red and Medieval grey ware; shapes represented by vase, bowl and dish

Taluk	*Site/Village*	*Nature of remains*
District Amravati		
Tivsa	Asoknagar(Vaigaon) (20° 52' 45"N;78° 07' 30" E)	Huge habitational mound belonging to early historical and medieval periods; burnt-ash with charcoal; red, coarse red, micaceous red ware, black painted red ware, red-slipped ware, black-and-red ware, with thick medieval grey ware along with terracotta wheel, sling-ball and mullar in basalt and iron slag
. -do-	Borgaon (20° 48' 45" N; 78° 17' 37" E)	An early historic mound having thick cultural deposits; pre-exposed fresh section shows ash deposits containing charcoal and bone with traces of mud floor; red, red-slipped, micaceous red, coarse red, black burnished and a sherd of black painted red ware, along with handle of a basin; shapes comprise vase, bowl, dish and jar; a muller fragment and a sling-ball in stone
-do-	Chinchpur (20° 53' 45" N; 78° 12' 28" E)	Mound with early historical and medieval remains along with a rubble foundation; red, coarse red, micaceous red and typical medieval grey ware pottery, medium to thick fabric; shapes comprise vase, dish, storage-jar and bowl.
-do-	GavhaNipani (20° 52' 10"N;78° 09' 00" E)	Mound with early historical and medieval remains
-do-	Jalgaon (20° 50' 00" N; 78° 12' 20" E)	Early historical and medieval pottery represented by black and micaceous red ware
-do-	Juna Dhamangaon (20° 49' 00"N;78° 08' 30" E)	Early historical and medieval remains
-do-	Kavli (28° 51' 15" N; 78° 10' 30" E)	Mound with early historical and medieval remains; dull black ware and micaceous red ware, and the bowl being predominant

Taluk	*Site/Village*	***Nature of remains***
Tivsa	Mangrul (20° 50' 00"N;78° 14' 45" E)	Mound with early historical and medieval remains, pottery represented by red-slipped, coarse red and micaceous red ware, medieval grey ware of medium to fine fabric; a mullar fragment in basalt
-do-	Varud (20°52’00"N;78° 15' 15" E)	An early historical mound having huge cultural deposits, eighteen courses of rubble foundation or structure, and thirty courses of mud-brick wall on the southern pre-exposed section; the eastern portion has thick deposits of ash and charcoal in unconsolidated condition; pottery represented by red, coarse red, black-and-red and grey wares
-do-	Vasad (20° 51' 30" N; 78° 11' 30" E)	An early historical mound with a brick structure and ashy layers containing charcoal in the pre-exposed section implies a habitational deposit; potsherds represented by red, red-slipped and micaceous red ware, black-and-red ware; a small sherd of black painted red ware; shapes comprise, vase, dish, bowl, thick storage-jar and handle of a basin
District Wardha		
Arvi	AntarDoho (20° 54’20”N; 78° 13' 20" E)	Mound containing early historical and medieval remains, potsherds represented by red, dull red, black ware and grey ware; comprising vase, jar, and bowls
-do-	Borgaon (20°55’00"N;78° 15' 00" E)	Mound containing early historical and medieval remains; potsherds represented by coarse red and medieval grey ware and arecanut- shaped terracotta bead
	Dhanor (20° 52'20" N; 78° 17' 00" E)	Early historical and medieval remains; potsherds represented by red-slipped and grey ware

Taluk	Site/Village	Nature of remains
District Wardha		
Arvi	Rohna (20° 51' 30"N;78° 19' 00" E)	Early historical and medieval remains with pre-exposed brick structure, belonging to early historical period
-do-	Vadhon (20°54'10"N;78° 12' 30" E)	Early historical and medieval remains with rubble foundation or structure on the pre-exposed section, coarse red and grey ware; represented by vase, bowl and dish
-do-	Virul (20° 48' 00"N;78° 21' 45" E)	Mound containing early historical remains with rubble foundation or structure; pottery represented by red-slipped, coarse red and grey wares

37. Excavation at Paithan, District Aurangabad

In continuation of the previous year's (*1995-96,* p. 56) work, excavation was resumed by the Aruangabad Circle of the Survey in two phases. In the first phase, the excavation was conducted by P.N. Kamble, M. Mahadevaiah, D.N. Sinha, D.T. Asar, S.B. Rindhe, D.L. Sirdeshpande, G.L. Gaikwad, V.R. Satbhai, S.M. Nazimuddin, Abdul Samad, B. S. Tadvi and S. L. Magre, besides the students from the Institute of Archaeology (1994-96), of the Survey, New Delhi, were also associated with the excavation as a part of their training. In all, seven trenches were laid in north-south orientation in the centre of mud fortified area on the eastern end of the site. In the second phase, the Survey undertook the excavation jointly with the Society for South Asian Studies (the British Academy, London) represented by James Howell. In addition to further diggings in some of the previous trenches, the area adjacent to the trenches taken up in 1936-37 (under the Nizams of Hyderabad) was also cleared and extended.

The finds included pottery, coins, beads, pendants, bangles, ceramics, weights, gamesmen, figurines, hopscotch, skin rubbers, disc, wheel, plaque, lamp, ear-stud, smoke pipe, toys, sling-ball, iron nails, arrow-heads, rings, spear-heads, copper anklet, blades, bell, kaolin figurines, bone points, comb and hair-pin. Amongst the structural remains mention may be made of ring-wells of brick and some stone walls with flooring.

38. Exploration in District Dhule

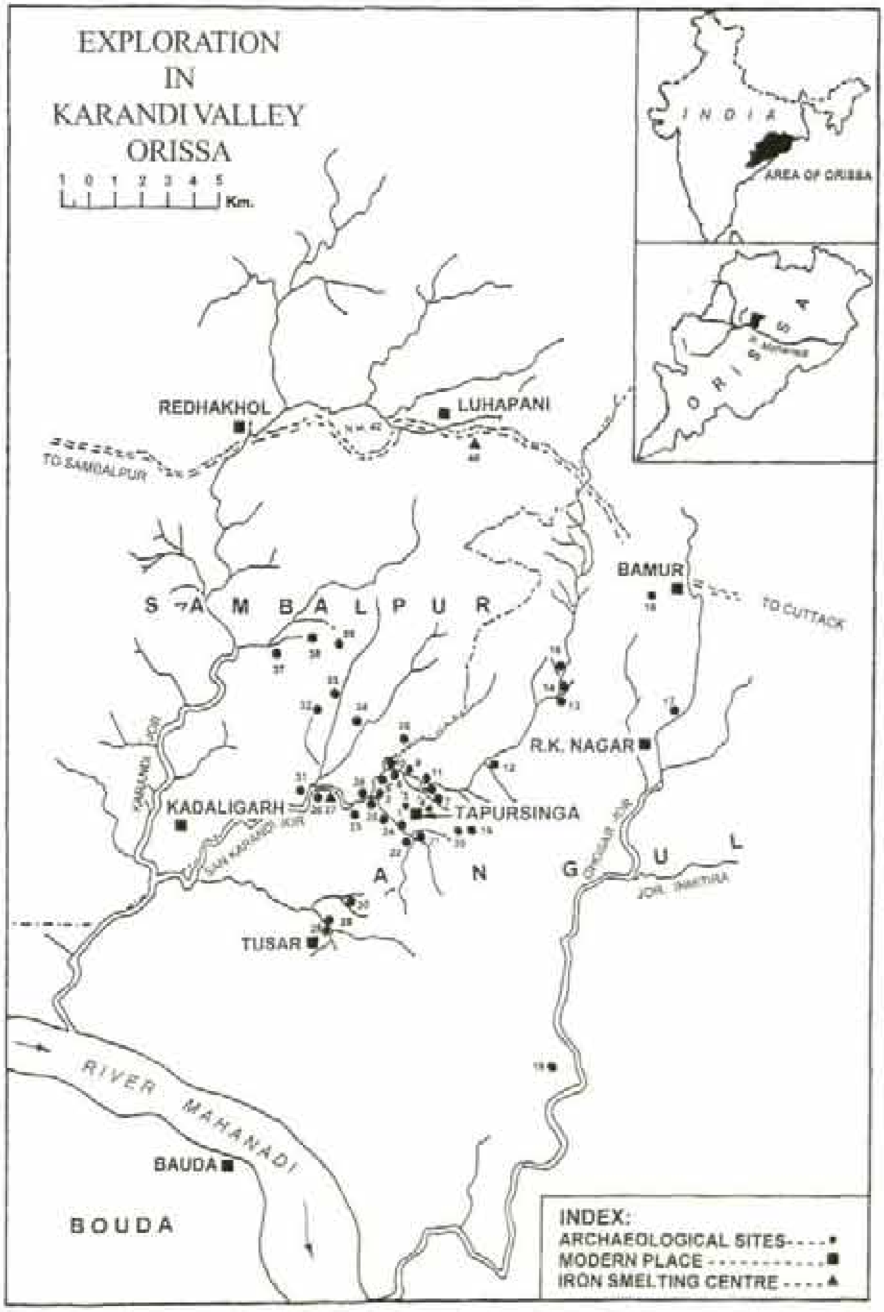
M.R. Dhekane of the Aurangabad Circle of the Survey, during the course of exploration, noticed the remains of medieval period such as copperplate, an image of Vishnu in Betawad town in Sindkhed taluk.

ORISSA

39. Exploration in Districts Angul and Sambalpur

The exploration undertaken by A. Pradhan, research scholar of the Sambalpur University, Sambalpur, in the valleys of San Karandi Jor and

Fig 3



1. Tapursinga-1
2. Tapursinga-2
3. Tapursinga-3
4. Tapursinga-4
5. Tapursinga-5
6. Kansarikud-1
7. Kansarikud-2
8. Gunduridadar
9. Badibahal-1
10. Badibahal-2
11. Badibahal-3
12. Brahmanipali
13. Kalmalkata-2
14. Kalmalkata-2
15. Katakpli
16. Naktidevi's Inc.
17. Khandahata
18. Anatira
19. Salaigoth-1
20. Salaigoth-2
21. Dhauragoth
22. Jagannathpur
23. Bhejidihi-1
24. Bhojidihi-2
25. Bhejidihi-3
26. Guapada-1
27. Guapada-2
28. Tusar
29. Bhandarimunda-1
30. Bhandarimunda-2
31. Kankanpada
32. Hatibahali
33. Badkasibahal-1
34. Badkasibal-2
35. San-Nuapada
36. Kukudabahali
37. Laindamal
38. Badkuda-1
39. Badkuda-2
40. Botgarh

Fig 4

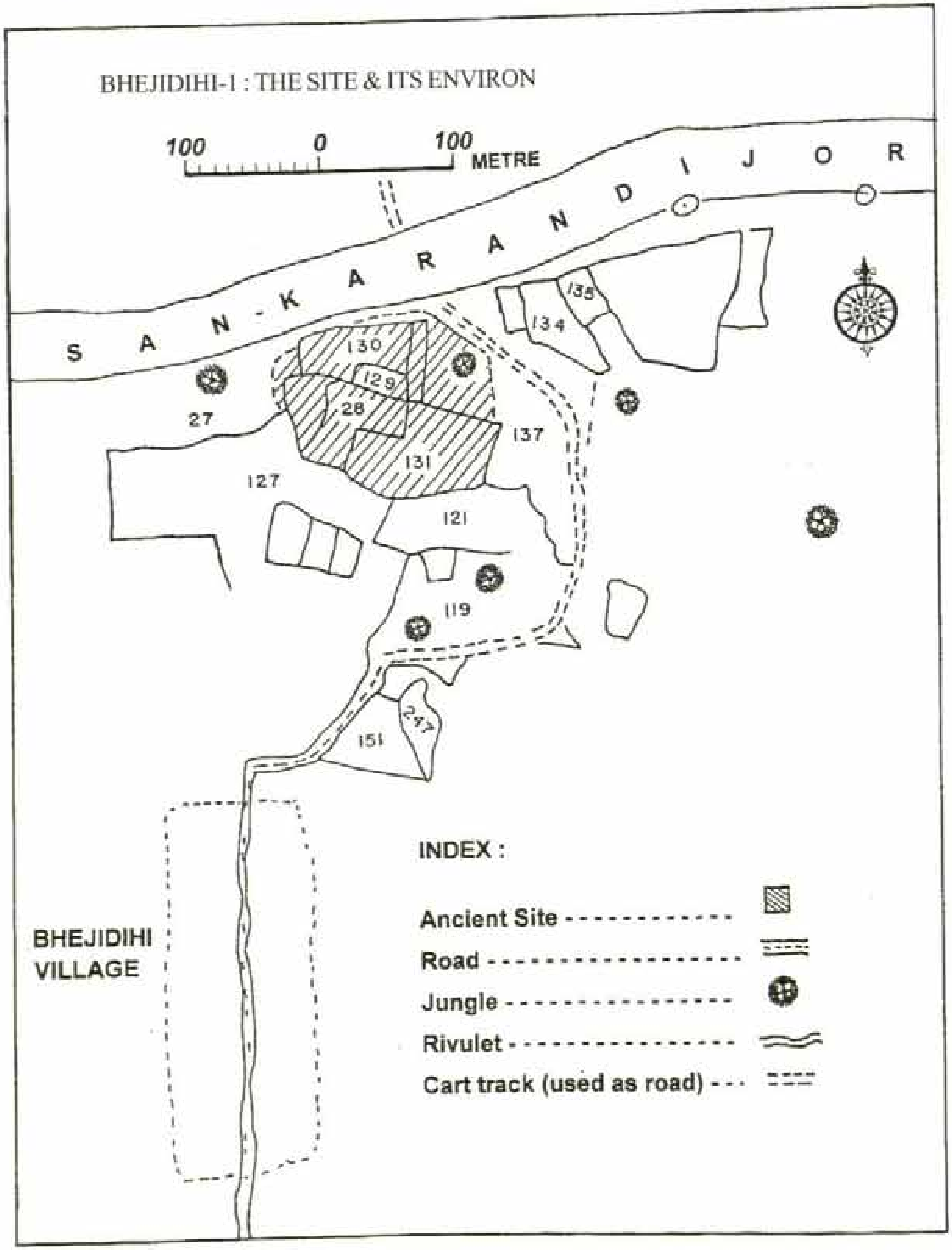
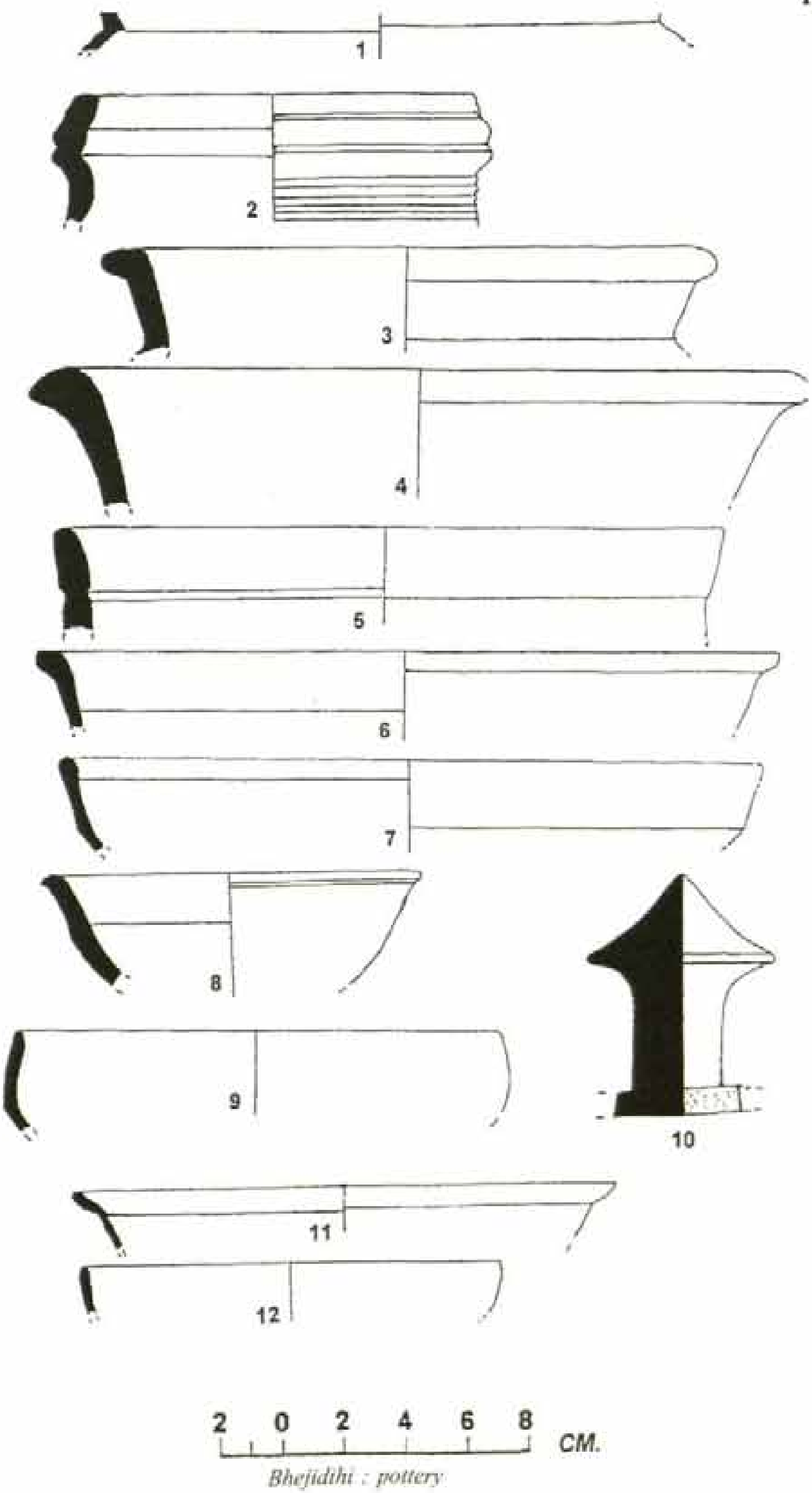

BHEJIDIHI-1 : THE SITE & ITS ENVIRON
100 0 100 METRE
S A N - K A R A N D I J O R
130
129
28
27
131
137
134
135
127
121
119
151
247
BHEJIDIHI VILLAGE
INDEX :
Ancient Site
Road
Jungle
Rivulet
Cart track (used as road)

Fig 5



Bhejidihi : pottery

Ghosar Jor (tributaries of River Mahanadi), revealed archaeological sites ranging from Palaeolithic, Mesolithic, Neolithic to the historical periods (fig. 3).

Palaeolithic tools have been recovered from the lowermost level of the site Badibahal-2 on the right bank of San-Karandi Jor; Jagannathpur on the left bank ofPodhagadha *nala,* in Athamallik tehsil, District Angul.

There are about seventeen microlithic sites discovered at Tapursinga (20° 55'N and 84° 21 'E), namely Tapursinga-1, Tapursinga-3 and Tapursinga-4; Anatira, Badibahal-1, Bhejidih-2, Bhandarimunda, Brahmanipali, Kansarikud, Katakpali, Kalmalkata-1, Saleigoth (all in Athamallik tehsil, District Angul). The mesolithic sites in Redhakhol tehsil, District Sambalpur, were found at Bad-kasibahal-2, San-Nuapada, Kukudabahali, Badkuda locality (two sites). Besides these, microliths have been found from Badibahal-2 and Jagannathpur below the Neolithic level. All these are open air sites, located either around the igneous outcrop or on the top of the red soil. The majority of sites lie just on the bank of San-Karandi Jor or its tributary *nala,* like Podhagadha *nala* and Kunda *nala.* The artefacts collected from the surface include fluted core, blade, lunate, bladelet, point, scraper and flakes. The principal raw materials used in these sites are: chert, quartz, crystals, chalcedony and mudstone.

In addition to the aforementioned sites, there were eight sites with Neolithic cultural assemblage, located in Athamallik and Redhakhol tehsils. The sites are Badibahal-2, Gunduridadar, Jagannathpur, Kamalkata-2, Tapursinga-2, Tusar in District Angul and Badkasibahal-1, Hatibahal in District Sambalpur.

Except Tapursinga-2, celt is reported from all these sites along with blade, scraper, fluted core, etc. Coarse red ware potsherds (hand-made and slow wheel-turned) have been found in all the sites except Badkasibahal-1 and Kalmalkata-2. The Neolithic celts were manufactured in this region as evident from a quern having narrow depression, found from the site Gunduridadar which might have been used for polishing stone-axes. Most of the sites are partly damaged due to erosion.

One multi-culture site at Bhejidih-1, on the left bank of San-Karandi Jor in Bhejidih village, Athamallik tehsil, District Angul was also brought to light (fig. 4). The site is approachable from Redhakhol via Hatibahal and San Nuapada covering a distance of 18 km. The site is also approachable from Raj Kishore Nagar via Tapursinga which will cover 13 km, through a *kachcha* road. The site has about 6.5 m cultural deposit. The artefacts collected from the surface include beads (carnelian), terracotta hopscotch, iron objects like nail, chisel and knife and stone objects such as axe, quern, ring-stone. Among the pottery black-slipped ware and black-and-red ware have been found. The potsherds are both wheel-thrown and hand-made. The important shapes are *handi,* bowl and storage-jar (fig. 5). Bowl is dominant in black-and-red ware and black-slipped ware. Besides, fossilized animal bones and antlers have also been collected. The site has three cultural periods, i.e. Neolithic (Period-1), Chalcolithic (Period-2), early historical (Period-3).

Following is the list of sites with archaeological remains discovered in two tehsils *viz.*, Athamallik and Redhakhol.

Tehsil Tehsil		
Athamallik	Anatira (20º 51’ 58”; 84º 25’ 58”)	Mesolithic

Tehsil	*Site/Locality*	*Nature of remains*
Athamallik	Badibahal-1 (20° 57'48"; 84° 23'24")	Mesolithic
-do-	Badibahal-2 (20°57'50"; 84° 23'04")	Palaeolithic, Mesolithic, Neolithic
-do-	Badibahal-3 (20°57'32"; 84° 23' 48")	Neolithic
-do-	Bhejidih-1 (20°57' 02"; 84° 22'17")	Neolithic, Chalcolithic
-do-	Bhejidih-2 (20° 56' 48"; 84° 22'48")	Mesolithic
-do-	Bhejidih-3 (20° 57'04"; 84° 22'36")	Mesolithic, Neolithic
-do-	Bhandarimunda-1 (20°55'02";84°21'36")	Mesolilhic
-do-	Bhandarimunda-2 (20° 55'24"; 84° 22'02")	Neolithic
-do-	Brahmanipali (20°57'42";84°25'12")	Mesolithic
-do-	Dhauragoth (20°56'28";84°23'30")	Neolithic

Tehsil	Site/Locality	Nature of remains
Athamallik	Gunduridadar (20°57'18"; 84° 23'50")	Mesolithic, Neolithic
-do-	Guapada-1 (20°57'20";84°21'28")	Mesolithic, Neolithic
-do-	Guapada-2 (20° (20°57' 18"; 84° 21 '48")	Iron-smelting centre
-do-	Jagannathpur (20°56'20";84°23'12")	Palaeolithic, Mesolithic and Neolithic
-do-	Kansarikud-1 (20°57'42";84°23'06")	Mesolithic
-do-	Kansarikud-2 (20°57'08"; 84° 24'00")	Neolithic
-do-	Kalmalkata-1 (20°59'06";84°26'40")	Palaeolithic, Mesolithic
-do-	Kalmalkata-2 (20°58'48";84°26'40")	Neolithic
-do-	Katakpali (20°59'32"; 84° 26'36")	Mesolithic
-do-	Khandahata (20°58'24";84°29'00")	Palaeolithic, Mesolithic
-do-	Naktinali (21°00'26";84°28'36")	Medieval inscription

Tehsil	Site/Locality	Nature of remains
Athamallik	Salaigoth-1 (20°56'32";84°24'40")	Mesolithic
-do-	Salaigoth-2 (20°56'30"; 84° 24'20")	Neolithic
-do-	Tapursinga-1 (20°56'48";84°23'12")	Mesolithic
-do-	Tapursinga-2 (20°57'18"; 84° 22'48")	Neolithic
-do-	Tapursinga-3 (20°57'06";84°23'18")	Mesolithic
-do-	Tapursinga-4 (20°57'00";84°23'42")	Mesolithic
-do-	Tapursinga-5 (20°57'30"; 84° 22'50")	Mesolithic
-do-	Tusar (20°54'54";84°21'20")	Mesolithic, Neolithic
Redhakhol	Bad-kasibahal-1 (20° 59'26"; 84° 22'00")	Mesolithic, Neolithic
-do-	Bad-kasibahal-2 (20°58'52";84°22'24")	Mesolithic
-do-	Bad-kuda-1 (21°00'20"; 84° 21'30")	Mesolithic

Plate XX



A



B

Barabati Fort : A, *columns of palace;* B, *heavy foundation columns*

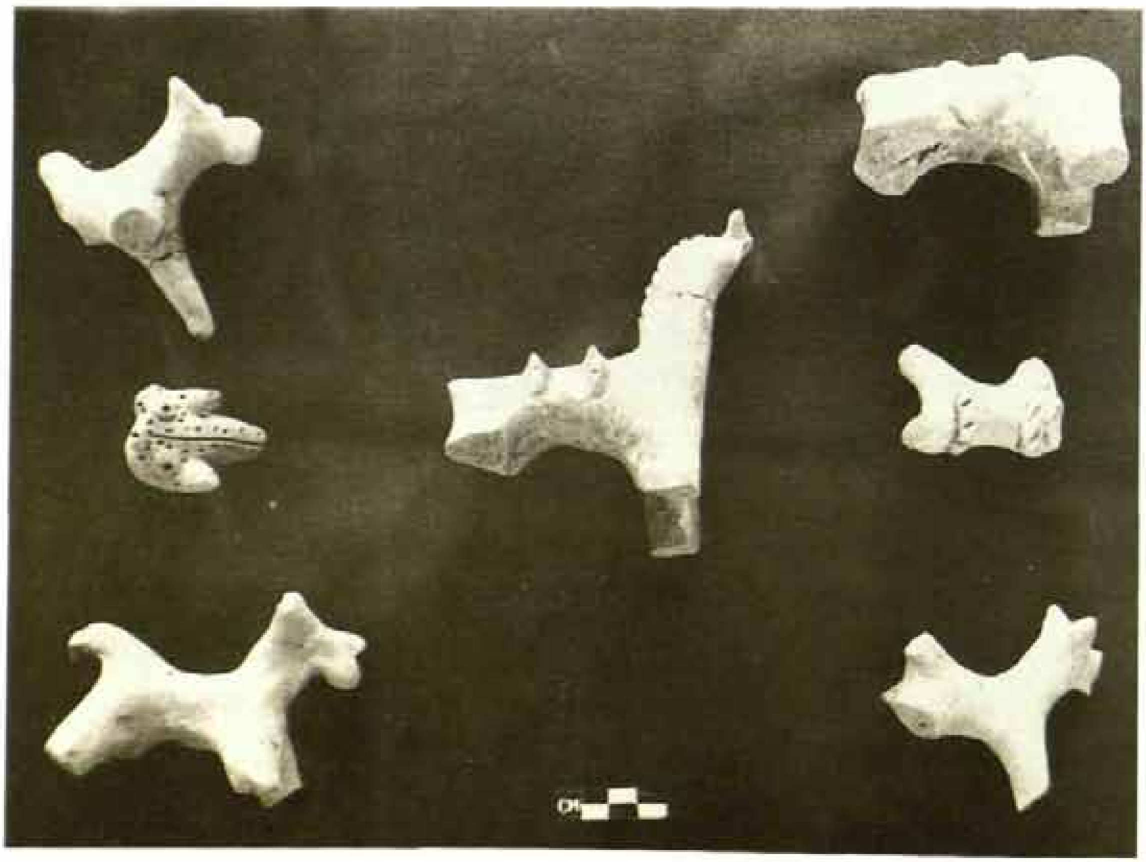
Redhakhol	Bad-Kuda-2 (21°00'16"; 84° 22'10")	Mesolithic
-do-	Betgarh (21°03'54"; 84° 25'12")	Iron-smelting centre
-do-	Hatibahal (20°59'12"; 84° 21'42")	Neolithic
-do-	Kankanpada (20°57'36";84°21'12")	Mesolithic
-do-	Kukudabahali (20°58'24";84°23'20")	Mesolithic
-do-	Laindamal (21°00' 12"; 84° 21 '58")	Mesolithic
-do-	San-Nuapada (20°57'24";84°22'24")	Mesolithic

40. Excavation at Barabati Fort, Cuttack, District Cuttack

In continuation of the previous season's work (*1995-96,* pp.61-64), Excavation Branch-IV, Bhubaneswar, of the Survey, resumed excavation at Barabati Fort, under the direction of K. Veerabhadra Rao, assisted by A.K. Patel, L.R.S. Rao, S.K. Bhoi and R.N. Sahoo. During this season, digging was concentrated mainly to expose the structures surrounding the palace as also to trace the relationship of the heavy foundation columns with the retaining wall at the northeastern corner.

Due to encroachment excavation was restricted to the western side, the southern edge adjoining the road leading to the Jawaharlal Nehru Indoor Stadium and a very small area at the north-east corner of the Palace area. Further, the earth excavated during the early stages of excavation was dumped on the western side of Watch Tower and also on the southern side facing the retaining wall of the citadel. As a result, the western retaining wall of the citadel was covered under roughly 9 m high excavated earth and the area on the southern side of the Palace area was covered under almost 3 m dump. Some of the dump on the

Plate XXI

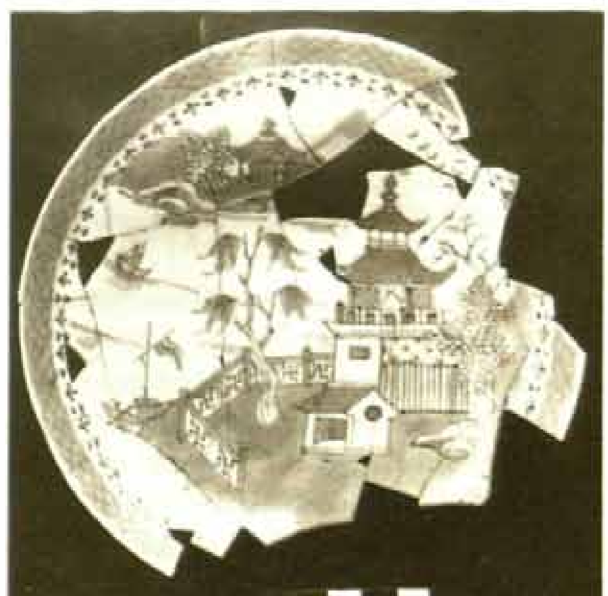


Barabati Fort: terracotta animal figurines

Plate XXII



A



B

Barabati Fort : A, *stone sculpture;* B, *shallow plate of Chinese porcelain*

western side was removed for laying trenches. Under the circumstances, trenches could be laid only on the western side near the tank on its southern side after removing some portion of the dump and at the northeastern corner to find out the relationship between the heavy foundation columns and the retaining wall.

The excavation on the western side have laid bare a number of architectural fragments like pillar bases, brackets, door-jambs, stone-channels and other minor architectural fragments. These were dumped on the western side in a haphazard manner and some times, even the columns (pl. XX A) were broken into two pieces, probably for transportation. There are no stratified deposits except deliberate dumping of constructional materials. Most of the architectural fragments are carved out of khondalite stones while robust columns, pillar-bases and door-jambs are carved out of schist with a considerable degree of polish.

There are altogether five pieces of columns found in Qds 1 and 2 of Trench XH-7 and Qd 1 of Trench XG-7. These pieces of columns measure 112 cm to 144 cm in height and have a section of roughly 80 cm. Except one piece, the others have a square base 50 cm and 80 cm. Above the base is an octagonal shaft with mouldings and half-moon design above the mouldings. The shaft is interspersed with another square block of about 32 cm thick. All the three bigger fragments are broken along the length and only one half of each exists. It is possible that two halves found in Qd 2 belong to the same column. The piece of column with a bigger base was the lower half of the column and the smaller one was resting above the larger one in such a manner that both the half-moon designs join together to make a single column. Fragments of the abacus resting above the column and below the bracket were also found. These stone columns made of schist without any sculptural ornamentation suggest that they were part of the Palace and were actually resting above the heavy foundation columns exposed in the earlier excavations. Weathering marks because of burning which caused cracks along the cleavage due to expansion were also noticed. When the Palace was destroyed, it must have been burnt and the pillars were thrown into low lying areas subsequently.

At the northeastern corner of the Palace area, digging at a portion of Trench ZC-5 revealed heavy foundation columns (pl. XX B) built on existing floor-level (Period-II) after the construction of retaining wall, as is evident from the traces of plaster on the retaining wall and the space between the columns and the retaining wall was filled up with the earth.

Apart from the carved schist columns, finds comprise terracotta figurines (pl.XXI) and a badly damaged female sculpture. The terracottas are mostly made by pinching a lump of clay, at times using applique technique for fixing eyes and ears. Available specimens depict dog, horse and an elephant about 4 cm to 6 cm in length. The fragmentary stone sculpture (pl. XXII A) wears a waistband, a necklace with traces of hair-do drawn on her left shoulder. Two miniature *pidhas* in khondalite were also found.

Fragments of Chinese porcelain in the shape of shallow plate with ring-base (pl. XXIIB) painted inside in blue color depicting huts, trees, boats, etc. Mention may be made of sturdy grey ware and dull red ware with slip of medium fabric and red-slipped ware of medium to fine fabric. The shapes include *handis,* vases, shallow dishes, bowls and *surahis.*

PUNJAB

41. EXCAVATION AT BRASS, DISTRICT FATEH GARH SAHIB

The Department of Cultural Affairs, Archaeology and Museums, Government of Punjab, Chandigarh, in continuation of the earlier work (*1994-95,* pp. 63-64), resumed excavation at Brass under the direction of K.K. Rishi and Kuldip Singh, assisted by Gurdev Singh and Sunil Kumar. The aim of this year's excavation was to trace the extension of Harappan culture and its linkage with the PGW culture; to gather further details of Kushan establishment, particularly the socio-economic conditions prevalent during the period, besides ascertaining the complete cultural sequence of the site. It established the following cultural sequence at the site: Harappan culture; PGW, black-slipped and grey ware cultures; Sunga-Kushan and Medieval (fig. 6).

During the period under review, the work was mainly concentrated in BRS-6 which revealed a sequence from the earliest time to the medieval times although the excavation was also conducted in BRS 1 and 2.

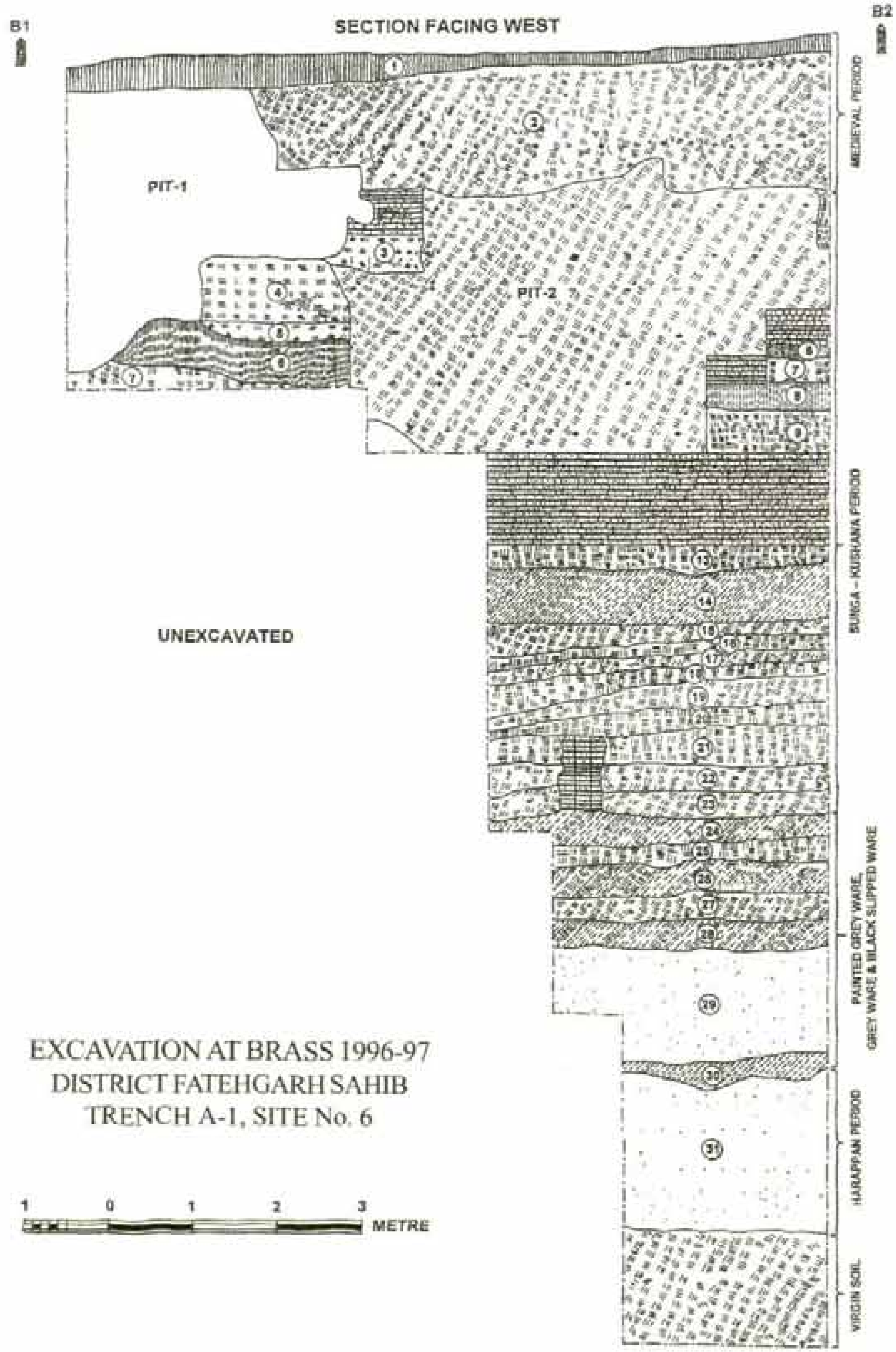
In Trench A-2, Site 2, it was noticed that the Harappan mound was badly disturbed by the later occupants by digging round pits and large-sized natural rain gullies, indicating that the site remained unoccupied for a long time. Sandy material in these rain gullies give an indication of flood during the Harappan time. The same situation was noticed at Sites 1 and 6. Total deposit of this culture is 1 m in thickness. The digging resulted in the collection of fine pottery with typical shapes and paintings.

In Trench A-2, a long-necked pot (pl. XXIII A) with ring-base was unearthed in layer 14. Other pottery shapes comprise dish-on-stand, goblets, beaker, ring-based bowls, dishes, jars, basins, cooking vessels, storage-jars, miniature dishes, shallow bowls painted with fish scales, net designs, flying bird, incisions, sigmas, zig-zag lines, vertical lines, etc. Perforated sherds were also collected. The antiquities collected from the Harappan deposit include terracotta and faience beads, bangles (pl. XXIIIB), terracotta wheels, beads of carnelian, agate and steatite besides some fragile pieces of a copper axe.

No constructional activities could be traced due to huge pits, cuttings and rain-gullies in PGW/ black-slipped ware level. One of the peculiar features of the site is that PGW, grey ware and black-slipped ware emerged together but so far as the ratio is concerned it varied from layer to layer, while in the earlier layers, the PGW is more in numbers in the upper layers, the black-slipped ware and grey ware are common with a few sherds of PGW. The shapes in PGW comprise *thali, lota* and *katora* with typical designs concentric circles, horizontal strokes, wavy lines, circles, dots, serpentine lines, etc., painted in black on grey surface. The associated red ware shows a rough surface with soot and husk marks, recovered in a large number. The recovery of iron slags from the excavation above the Harappan level indicates its use for the first time during the PGW levels. Iron implements were prepared by way of smelting. It is important to note that the tradition of PGW continued till later stage of grey ware and black-slipped ware. The grey ware is (pl. XXV A) however, same in texture, colour and fabric as compared to the PGW. At Site 2, the layers 13 to 7 yielded a mixed deposit of PGW, grey ware and black-slipped ware.

In Trench A 2, Site 2, some structures in mud-bricks (43cm x 25cm x 10 cm) were noticed. A small room (2.5 m x 1.80 m) which was based on layer 8

Fig 6



EXCAVATION AT BRASS 1996-97
DISTRICT FATEHGARH SAHIB
TRENCH A-1, SITE No. 6

Plate XXIII



A



B

Brass : A, in situ Harappan pot ; B, faience bangle fragments, Harappan period

Plate XXIV



A



B

Brass : A, semicircular structure of kachcha bricks; B, joint hearths, Trench A, Site 6, Kushan level

and sealed by layer 6, was also exposed. From the inner side of this room potsherds of black-slipped ware, grey ware and a few sherds of PGW were collected. From the size of the bricks mentioned above, the structures may be assignable to the Mauryan period, i.e., *circa* third century BC.

At Site 6, Trench Al, layers 17 to 28 yielded mixed pottery e.g., PGW, grey ware and black-slipped ware and also of Kushan type.

The other finds include terracotta arecanut beads, *ghata-shaped* beads, semi-precious stone beads, copper/terracotta/bone/shell bangle pieces, bone styluses, hair pins etc.

The succeeding level is represented by the Sunga and Kushan, who dominated the scene for a long time at the site of Brass.

An important (pl. XXIV A) structure of *kachcha* brick, semicircular, probably for storing grains, having twelve courses of bricks was exposed with inner height of 60 cm and outer height of 85 cm. Bricks (25 cm x 40cm x 7 cm) used in this structure are specially prepared from clayey material and therefore, are hard. Also exposed was a room-complex of *kachcha* bricks with *chulah,* hearths, cornbins and mud-floors.

The Site 6 also yielded complete structural data of the Kushans. Nine structural phases of the Kushans were noticed.

An important find (pl. XXIV B) is the three adjacent oval-shaped *chulhas,* exposed behind the wall of phase VII. Probably the persons living in these structures were using these *chulhas* jointly as suggested by a large quantity of ash nearby.

In the earlier phases, structures are in good condition and are well laid. The degeneration is clearly visible from the fourth phase onward, because constructional activities are of poor standard. The first three phases appear to belong to the early Sunga-Kushan period and the remaining to that of the later Kushans.

The pottery of Sunga-Kushan period is marked by stamp designs showing *nandipada, pipal* leaf, *tri-ratna,* sun symbols, etc., besides paintings in black on exterior side and on shoulders of vessels in the form of bands, zig-zag and wavy lines. The mat-impressed pottery was collected from the early phases. The incurved bowls, with short curvature became prominent during the earlier phases and sharp in later phases, The shapes recovered from the excavations comprise incurved bowls, cooking vessels, basins, storage-jars, lids, water vessels, shallow plates, dishes, vessels with short-neck, long-necked vessels with flayed rim, *surahis,* miniature pots, earthern lamps, votive tanks, basins with spout and perforated vessels, etc.

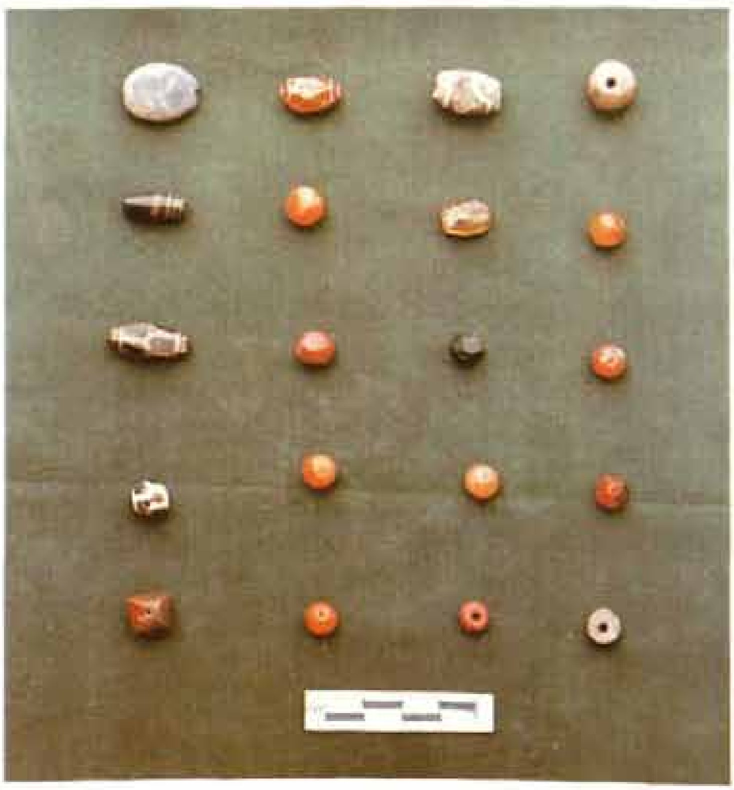
Various types of antiquities such as terracotta sealings, stamps, copper coins, terracotta beads, semi-precious stone beads (pl.XXV B) of camelian/agate, lapis lazuli, coral etc., shell/bone/copper beads, terracotta sling-ball, cart-frame/wheels, skin scrubbers, weights, human/animal figurines (pl.XXVI A), point/stylie (pl. XXVIB), bangle pieces, ear-studs/pendants, gamesmen, copper antimony rods, iron spear-head, etc., have been recovered from all the phases of Sunga-Kushan period.

The Site BRS-6 yeilded remains of medieval period from the top of the mound upto layer (3). The structural activities with two structural phases in the form of brick-bats were found scattered here and there,

Plate XXV



A



B

Brass : A, *grey ware bowl;* B, *semi-precious stone beads*

Plate XXVI



A



B

Brass : A, terracotta animal figurines, Sunga-Kushan period; B, bone stylie

besides the remains of grains from layer (2) at a depth of 1.10 m. These grains were analyzed by the Department of Botany, Punjab Agricultural University, Ludhiana, Punjab. According to the report, the material contains the remnant of husk of cereal grains. The endosperm portion, which stores starch was completely degraded during the course of long storage period. On the basis of deposition of silica layers in the husk and the dimension of cavity enclosed by the husk, the sample is identified as that of paddy *(oryza sativa)* seed.

The pottery collected from these layers comprise knife-edged bowls, incense-burners, *lotas, surahis, kunalis,* storage-jars, portions *of hukkas,* dishes of glazed ware, cooking vessels with rustication and soot-marks, miniature pots and basins, etc. The antiquities include terracotta beads; terracotta and glass bangles, semi-precious stone and glass beads.

RAJASTHAN

42. EXPLORATION IN DISTRICT JHUNJHUNU

During the course of village-to-village survey, B.R. Singh of the Jaipur Circle of the Survey, discovered the following sites with antiquarian remains which are as under:

Village/Site	*Nature of remains*
Bhurasar (28°9'30"N;75°22'00"E)	Late medieval *chhatris*
Nayasar (28° 8 ' 28 "N; 75° 21'24" E)	Historical

43. EXCAVATION AT BALATHAL, DISTRICT UDAIPUR

Excavation at Balathal (*1995-96,* pp. 64-70), was conducted for the fourth consecutive year by V.N. Misra, Vasant Shinde and R.K. Mohanty of the Deccan College Post-graduate and Research Institute, Pune and Lalit Pandey and Jeewan Kharakwal of the Institute of Rajasthan Studies, Rajasthan Vidyapeeth, Udaipur. They were assisted by Anup Mishra, Abhijit Dendekar, Kurush Dalai, Balram Tripathy, Rhea Mitra, Tama Panda, B.B. Dighe, S.A. Pradhan, D.V. Karanjkar, Sunil Jadhav, V.G. Vishwasrao, M.D. Kajale, P.K. Thomas, P.P. Joglekar, Arati Deshpande and Malti Nagar.

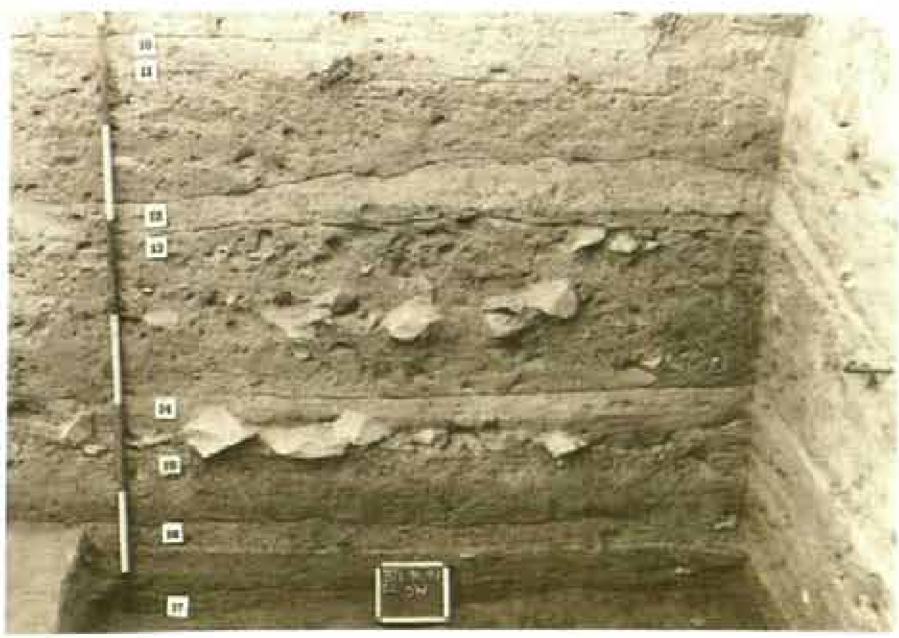
This season's excavation had three objectives: i) to understand the growth of the Chalcolithic settlement and, ii) to establish the chronology and cultural affiliation of the fortified enclosure exposed in the previous seasons; and lastly to expose the Chalcolithic structural-complex found on the southern side of the settlement in their entirety as also to study the socio-economic aspects.

To realize the first two objectives, Trench D2 inside the fortified enclosure, already being dug for last two seasons, and six quadrants—two each on the west, north and south of the settlement, outside the fortified area were dug. These quadrants comprised the northern half of Trench H4, north-west quadrant of B1, north-east quadrant of OB 1 and northern half of HX2. Except the two quadrants of H4, which were dug for a depth of 3 m each, all were excavated down

Plate XXVII



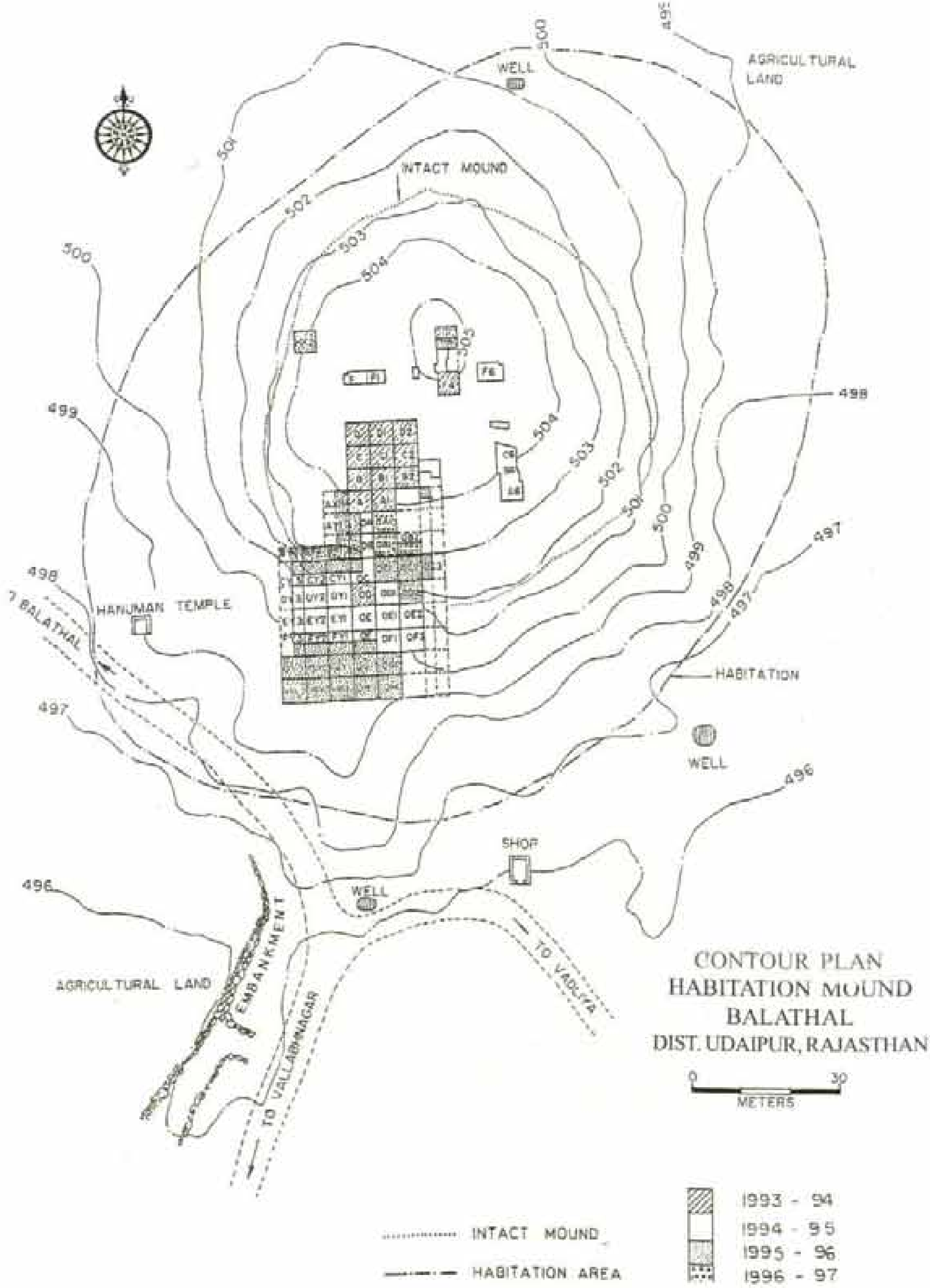
A



B

*Balathal : A, eastern part of southwestern bastion of fortified enclosure;
B, floor levels, Trench D2, inside fortified enclosure*

Fig 7



CONTOUR PLAN
HABITATION MOUND
BALATHAL
DIST. UDAIPUR, RAJASTHAN

to the bed-rock. A vertical cutting was made in Trench D in the centre of the western wall of the fortified enclosure down to the base to understand the nature of the construction of the wall. The height of the wall is 3.80 m. The core of the wall, 2.20 m in width, was made mainly of mud, with limited use of complete and broken mud-bricks and stones, all of which were rammed hard. It was strengthened by 1.60m wide stone revetments on both sides. The mud-wall and the revetments were raised over layer 15 which is composed of pinkish clay. This layer seems to have been intentionally laid to provide a strong foundation to the fortification.

To realize the third objective, six new Trenches-OA1, OBI, OB2, BY1, BY2 and BY3 - were opened on the northern, eastern and western sides of Structural-complex 1, comprising multi-roomed Structure 10. Trenches OA1 and OBI were dug in the total area of 5 x 5 m whereas the remaining trenches were dug only partially as follows: OB2, northern half; BY 1 north-west quadrant; BY2 northern half; B Y3 north-east quadrant. The last three trenches were opened to uncover the plan of the pottery kiln discovered in the previous seasons (fig. 7).

Besides, following trenches, already opened in previous seasons, were also dug as follows: A, Al, OA, OB, OC1, OC2, OD1 and OD2 were dug in the total area of 5 x 5 m; AX1, and AY1, eastern half; BY1, eastern half; OC, eastern half: OC3, and OD3 western half; CY1 and CY2, northern half; CY3, northeastern quadrant.

Thus, in this season digging was done in a total area of 490 sq m. The digging done to the bed-rock/virgin soil in trenches D2, northern half of HX2 and north-west quadrant of B1 has produced evidence bearing on the origin and development of the Chalcolithic culture.

The initial settlement at Balathal appears to have been of a modest nature. No evidence of structural remains of the use of either mud-bricks or stones for construction could be encountered in the lower levels. In the lowermost layers (21-19) of Trench HX2 some of the characteristic Chalcolithic wares such as thick red-slipped, thin red and coarse black-and-red, thick in section, and inadequately fired, and the majority of the vessels are hand-made. Shapes such as wide-mouthed deep carinated bowls, small narrow-mouthed jars, and storage-jars with beaded rim, which are index types in these wares, are present from the beginning. A gradual development is seen in these wares in terms of technology and quality of vessels. The wares gradually became finer and reached their highest quality in the middle phase of the Chalcolithic period (around 2400 BC). The Reserve-slipped Ware was also introduced by the pioneering settlers. Since the earliest known occurrence of this ware in the subcontinent is at Balathal, it may be inferred that the technique of its production was borrowed by the Harappans when they established a close contact with the Chalcolithic farmers of Mewar around 2400 BC.

It is now clear that the fortified enclosure, located in the central part of the habitation, was constructed sometime, perhaps a couple of centuries, after the founding of the settlement. The evidence from Trenches D2 and the north-west quadrant of B1, which were excavated to the natural level, shows that the wall of the fortified enclosure was constructed over a 60 cm thick strong platform of mud, mud-bricks, brickbats and stones mixed together and rammed hard (pl. XXVII A). The wall has survived to a height of 3.21 m on the southern side. The upper part of the wall was strengthened by adding a support wall which is 1.25 m wide and is made of black clay over a stone foundation.

Plate XXVIII



A



B

Balathal : A, *chulhas on the bed-rock, Trench D2, within fortified enclosure;* B, *structural complex (1) with eleven rooms, phase II, Chalcolithic*

A part of the southwestern bastion of the fortified enclosure was exposed in the southwestern quadrant of Trench Bl. It is rectangular in shape and has survived to a height of 3.37 m. Like the wall it slopes outward from the top towards the bottom. The bastion and the wall were constructed simultaneously as both stand on a common platform. The bastion projects out from the wall to a width of 1.10 m. It is made of semi-dressed stone-blocks which were laid in a perfectly straight alignment and joined together with mud-mortar. The sharp angle formed at the junction of the eastern and the southern faces of the bastion testifies to the masonry skill of the builders (pl. XXVII A).

In Trench D2, dug inside the fortified enclosure, three floor levels, each one resting over a thick bedding of black clay and occasional stones, were partially noticed. These beddings appear to have been intentionally laid to level the area below the floors. The floors were made of yellow silt rammed hard and were plastered with cow-dung. Average thickness is 12 cm (pl. XXVIIB). In the upper part of the trench thick layers of ash, sometimes vitrified, resulting from the burning of cow-dung and heavily burnt earth were noticed. Two large U-shaped ovens *(chulhas),* with a common middle arm, and made of mud, were found in the southeastern corner of this trench very close to the inner face of the mud and stone wall. The *chulhas* were raised right over the bed-rock and are in an excellent state of preservation (pl. XXVIII A). In the absence of any substantial structures and other occupational evidence inside it, the function of the fortified enclosure is unclear. However, the amount of time and energy expended in building the massive ramparts of the enclosure would suggest that it may have housed the residence of the chief of the community. While the fortified enclosure in the centre of the habitation at Balathal is unique among the Chalcolithic settlement in the country, it may be mentioned that evidence of external mud fortifications is reported from the Chalcolithic sites of Nagda and Eran in Central India.

A number of rooms of Structure 10 of Complex 1, belonging to structural phase II, were exposed on the northern and eastern sides of the previously exposed rooms (10A-10G). Rooms 10E, 10F and 10G, partially exposed in the previous seasons, were fully exposed during this season. Room 10E, located on the eastern side of Room I0C and roughly rectangular on plan, is 8.20 m long and 2.40 m wide. The major portion of this room is occupied by the support wall of Room 10C, which has destroyed the contents of the room and therefore, its exact function cannot be determined. Room 10F, located on the eastern side of Room 10E, is roughly rhomboidal on plan. The length of the room is 4.70 m along the eastern wall and 7.75 m along the western wall. Its width also varies from 3.30 m along the northern wall to 4.50 m along the southern wall. Close to its southern wall the room contains two domestic hearths, each represented by three loose stones placed in a circular fashion. These hearths were protected by a 2.40 m long and 45 cm wide mud-brick wall. This was probably another kitchen of the complex. Room 10G, located on the northern side of Rooms 10E and 10F, is squarish on plan, measuring 4.00 m x 3.90 m. To its east is located one small rectangular room (10H), which is separated by a partition wall. It is exposed in an area of 3.80 m (N-S) x 2.30 m (E-W). This part of the room may have been used for storage as it yielded remains of two circular clay bins which were damaged by fire. Room 10 I, located on the northern side of Room 10G, is partially exposed in an area of 4.70 m (E-W) x 3.80 m (N-S).

A long rectangular room divided into two parts (Rooms 10J and 10K) by a partition wall, is located on the northern side of Room 10D. Room 10J measured 6.00 m (N-S) x 3.30 m (E-W), and contains two circular burnt patches. Room 10K, located to the north of 10J, is exposed in an area of 3.60 m x 3.50 m. Its northern end is not yet excavated. Near its southeastern corner is a circular feature made of stones. The local workers opined that it was meant for keeping poultry. Both these rooms containing large quantity of pottery and bones may have been used for dwelling purposes (pl. XXVIII B). Inspite of excavating for over four seasons, Complex 1, containing rooms in Structure 10, is still not fully exposed. However, judging from the number of rooms, their size and unusually strong walls, the complex would seem to have been occupied by a prosperous and large family.

A number of structures of structural phase III were also exposed. A major portion of Structure 8, which was partially exposed in 1994-95, was further exposed on the northern side. Only the eastern and northern walls of this structure have survived. The eastern wall has survived to a length of 9.80 m and a height of 1.22 m. The northern wall is exposed to a length of 8.90 m. Three rooms of this structure have survived on its northern side. These have been divided by thin mud-brick walls. The room on the eastern side is 3 m long (N-S) and 1.90 m wide (E-W). The middle room is the biggest amongst all as it is 5 m long and 4.50 m wide. The room on the western side is exposed in an area of 4.50 m x 2 m (pl. XXIX A).

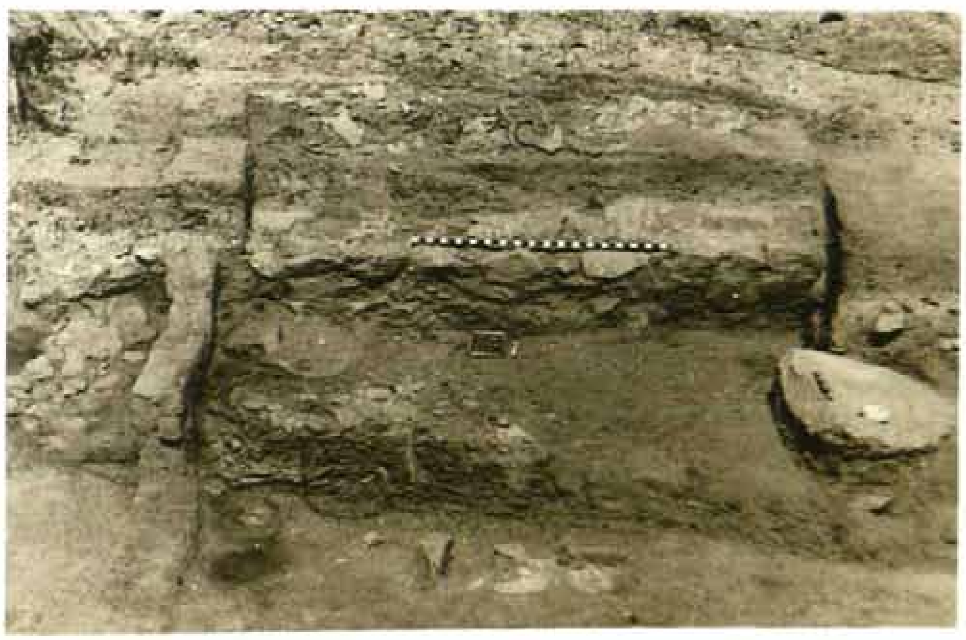
Structure 23, partially exposed in the northern part of Trench H4, has been assigned to structural phase III on the basis of its position below the last structural phase in the northern part of the settlement. It is possibly a rectangular structure of mud-bricks standing on a stone foundation. It is exposed in an area of 2.90 m (E-W) x 1.65 m (N-S). The size of the bricks is 33 cm x 18 cm x 12 cm. Structure 24 was exposed on the southern side of the mound in Trenches OA1 and OBI. Only the eastern and northern stone walls of this structure have survived. It is 5.80 m long (N-S) and 2.90 m wide (E-W). It has a well-made floor and contains a number of storage-jars. Along its northern wall there is a circular fireplace. This evidence suggests that it was a dwelling structure. Structure 25 of the same structural phase, located just to the south of the southwestern bastion of the fortified enclosure, is a twin-roomed structure. It has been destroyed on its eastern and northeastern sides. The southern room of the structure has survived to a length of 8 m and a width of 7.80 m, whereas the northern one has survived in an area of 3.40 m× 2.40 m. This structure also appears to be a dwelling as it contains a circular fireplace. No new structures of structural phase IV were exposed in this season.

The middle room of Structure 8 contained two pottery kilns, the second one at a higher level and immediately behind the first one. Both kilns, rectangular on plan are enclosed between the two north-south running mud-brick walls. The lower kiln contains seven clay containers, circular in shape but of varying sizes, each full of burnt clay lumps and pottery pieces. The floor of the kiln is heavily burnt and contains a lot of ash. The second kiln yielded several complete vessels, including a large deep basin. It was used for firing tan and coarse red-slipped wares (pl. XXIX B). The presence of these two kilns within the same house suggests pottery making to be a hereditary occupation. The potter's house was located on the western side of the settlement. Pottery found this year is largely similar to that of the previous years. No new fabric was found but a few new shapes and designs were noticed. The new shapes include a very large dish in

Plate XXIX



A



B

Balathal : A, Chalcolithic structure (no.8), phase III and B, pottery kilns of two phases, the circular clay containers in the foreground belong to the earlier kiln

tan ware, two deep basins, one with lugs, in grey ware, and two large, wide-mouthed and almost globular bowls in thin red ware (pl.XXX A). The same is the case with other objects. Comparatively large number of microliths, including bladelets and associated debitage, were found in the lower levels. A couple of terracotta bull figurines were also recovered during this season. Large quantities of animal bones and some charred grains were also found. A noteworthy discovery is of charred mustard grains from the middle levels of the Chalcolithic period. This is the earliest known evidence of mustard in India.

Ten radiocarbon dates are now available from Balathal. The oldest of them, from layer 18 of Trench HX2, is 2600 BC. This suggests that the dates form the lowest levels of the site may go back to 2800 BC. Radiocarbon dates from the Chalcolithic sites in Central India and the Deccan do not go beyond 2200 BC.

In the early historic period, four wattle-and-daub structures, some having stone foundations, were exposed this season. All the structures belong to layer 3, which is dated to the beginning of the Christian era. All of them are located immediately on the southern side of the iron-smelting and working area, where six clay furnaces were found in earlier seasons (*1993-94,* pp. 93-98). They are squarish on plan and are only partially preserved. They seem to have been simultaneously destroyed by fire which was probably caused by the furnaces located in the immediate vicinity. All the structures appear to be residential since they were furnished with silos and storage-jars. They were probably occupied by iron workers.

Structure 19, located immediately to the south of the smelting area in Trenches A and AX1, was exposed in an area of 5.15 m (N-S) x 5 M (E-W). A number of broken pots and two clay-plastered silos were noticed in its central part. Structure 20, located to the east of Structure 19, measures, 2.60 m (N-S) and 2.55 m (E-W). Two silos, lined with grass, were noticed in its eastern part in an open area which may have served as a courtyard. Structure 21, located just to the west of Structure 20 and exposed in an area of 2.75 m (N-S) x 2.40 m (E-W), contained a clay-plastered pit. Inside the pit were found two small globular pots, a conical lid and a Roman lamp. This evidence may be associated with some ritual activities. Structure 22, located on the northeastern side of Structure 21, was exposed in an area of 2.90 m x 2.40 m. On the eastern side of the structure were found a couple of large storage-jars and four circular silos. The silos were full of charred rice, wheat, mustard and black gram and interestingly each silo contained a different variety of grains (pl. XXX B).

A large number of iron objects comprising points, dagger blades, adzes, rods, nails, drills, hooks, clamps and hoes were found. The most noteworthy discovery of this season is a bell. It is made of a thick sheet of copper, overlain with a thin sheet of iron. The inner loop and the large loop on the apex are made of iron This shows the presence of complex metal technology during the early Historic period at Balathal. Ornaments include a large number of glass bangles, a few bangles of terracotta and beads of semi-precious stones, glass and terracotta.

The presence of a number of iron-smelting furnaces and numerous iron tools at the site indicates that Balathal was an important industrial centre during the Early Historic period. Extensive surveys were undertaken around the site to locate the source of iron. Two sites namely Iswal, roughly 50 km west, and Bhoiyonki Pancholi, roughly 20 km south of Balathal have thick deposits of iron ore. There is evidence to suggest that the iron deposits at Iswal

Plate XXX



A



B

Balathal : A, *Chalcolithic pottery;* B, *wattle-and-daub structures, early historic*

were exploited right from the beginning of the Christian era. It is not unlikely that the people of Balathal also exploited these sources.

TAMIL NADU

44. Excavation at Kodumanal, District Erode

The Department of Archaeology and Museums, Government of Tamil Nadu, Chennai, in collaboration with the Tamil University, Thanjavur, conducted excavations at Kodumanal under the direction of Natana Kasinathan, Rajan, and A.Abdul Majeed, assisted by R. Poongunran, R. Selvaraj, Subramanian, V. Ramamurthy, Munisamy and Adiyaman.

The excavation brought to light two cultural periods *viz.,* Megalithic and Early Historic. During this season six trenches *viz.,* KML 1,2,3,4,5, and 6 were laid bare in the habitational site.

On the eastern side of the habitation site, the burial site is located. In the burial site, a megalithic cairn-circle marked as Megalith 1 was excavated. The diameter of this megalithic burial is 10.90 m (pl. XXXI A). It consists of one primary cist with two chambers and two sub-cists. The grave goods such as lids, bowls, dishes, four-legged jars and ring-stands were found placed outside the primary cist. At the southeastern side of this primary cist an urn was found which surprisingly yielded seven hundred and eighty-two beads of carnelian (pl.. XXXI B). An iron sword measuring 169 cm was also found at the eastern side of the main cist. Besides four iron swords, a copper toddy filter (pl. XXXI C) with lotus and peacock designs, double-edged axe, small daggers, stirrup-like object, graffiti bearing potsherds were also collected.

The habitational site brought to light a few granaries with mud floorings, pottery with graffiti, comparable to the Harappan symbols, a painted sherd, black-and-red ware, black-slipped ware, Russet-coated ware and red-slipped ware. Other antiquities comprise beads of quartz and terracotta, spindle whorls and a considerable number of inscribed potsherds. This period is datable to 300 BC-AD 300.

45. Excavation at Alagankulam, District Ramnad

The Department of Archaeology and Museums, Government of Tamil Nadu, Chennai, conducted excavations at Alagankulam under the direction of Natana Kasinathan and A. Abdul Majeed, assisted by S. Vasanthy, D Thulasiraman, S. Selvaraj, M. Kalaivanan and N. Ganesan. The excavation established a two-fold cultural sequence *viz.,* Period I, with a deposit comprising black-and-red ware, NBPW, Rouletted ware, grey ware, inscribed and graffiti bearing potsherds. This level is assignable to *circa* 400 to 100 BC. Other finds include a silver punch-marked coin, a Pandya square coin bearing the figure of an elephant on the obverse and a fish on the reverse.

Period II witnessed the intrusion of pottery, amphorae pieces, pottery with protruding base and leaf motif in the interior, Rouletted ware, pottery with inscribed designs like ship and an elephant along with a considerable number of Roman coins. On the basis of these finds this period could be dated between *circa* 100 BC and fifth century AD.

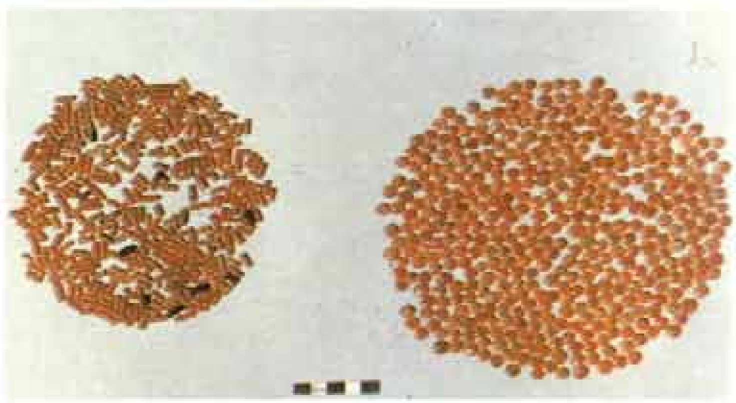
46. Excavation at Tiruverkadu, District Tiruvellore

The Department of Ancient Indian History, Culture and Archaeology, Madras University, Madras, resumed excavations at Tiruverkadu in Sriperumbudur taluk, situated 19 km west of Madras, under the direction of S. Gurumurthy, assisted by R. Ponnusamy,

Plate XXXI



A



B



C

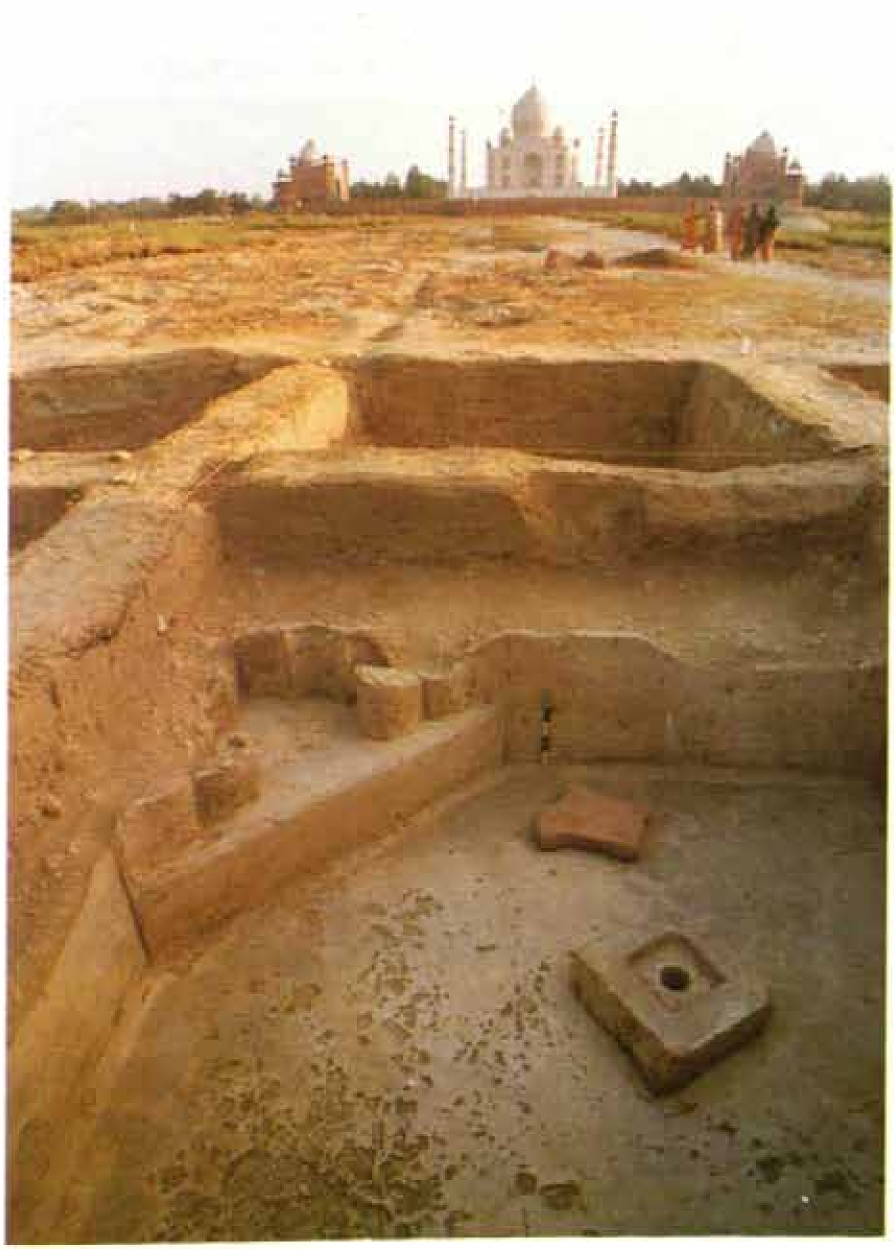
Kodumanal : A, *Megalith 1;* B, *carnelian beads;* C, *copper toddy filter*

Plate XXXII



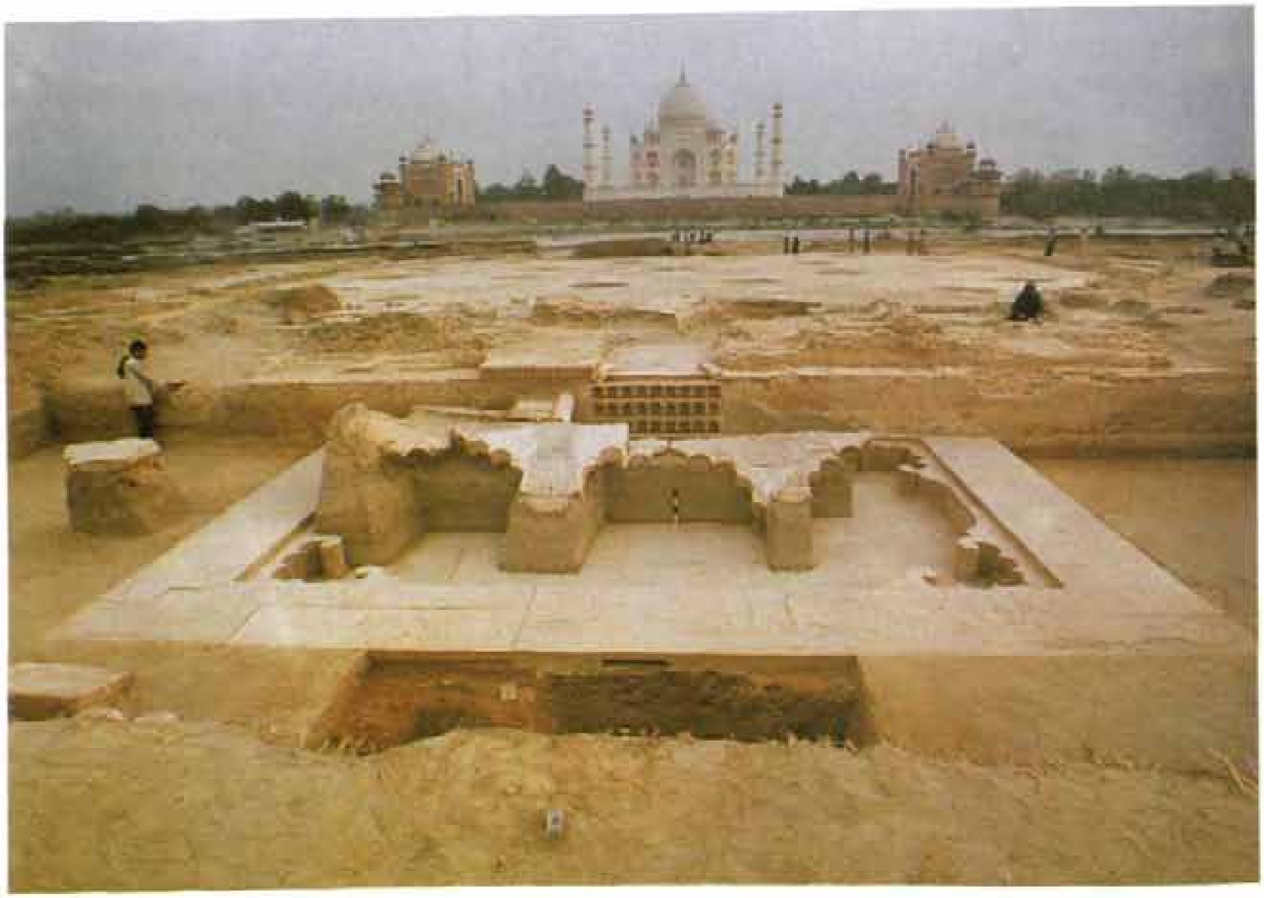
Mehtab Bagh : view of excavated remains on the periphery showing baradari

Plate XXXIII



Mehtab Bagh : view of central tank

Plate XXXIV



Mehtab Bagh : view of southern periphery, octagonal pool and cascade

M. Seran and P.D. Balaji. Trench TVD-1 laid in the previous season to the north-west of Sri Vedapurisvarar Temple was extended further towards the western side by laying a new Trench TVD-3 measuring 6 m x 5 m. The excavation revealed a cultural deposit of 2.25 m below which natural soil was noticed. The deposit was ashy and compact with some disturbance here and there. It contained potsherds belonging to black-and-red ware, black ware, red-slipped ware, orange-slipped ware and coarse red ware. Besides a number of knobbed-lid and a few spouts were also picked up. Fragments of amphorae jars were also collected from the deposit.

The excavation yielded important antiquities such as, terracotta hopscotches, ear ornaments, sling-ball, spindle whorl and seal; glass objects like beads and bangles besides a few iron objects.

At a depth of 1.29 m in layer 6, a hearth was noticed *in situ.* At this level a floor, rammed with hard clay was identified. Presence of many charcoal pieces in association with black-and-red ware sherds nearby the hearth, indicated that the floor represented a kitchen.

Pottery and antiquities collected from the excavation reaffirmed the following cultural sequence arrived at in the previous season.

Period IA

(Iron Age)
400 BC to AD 200
(black-and-red ware, black ware and amphorae)

Period IB

(transition from Iron Age to early historical period)
AD 200 to 600
(orange-slipped ware, survivals of black ware)

Period II

(early medieval)
AD 600 to 1200
(coarse red ware and survivals
of red-slipped ware)

Period III

(late medieval) .
AD 1200 onwards
(coarse red ware)

UTTAR PRADESH

47. EXCAVATION AT MEHTAB BAGH, DISTRICT AGRA

In continuation of the previous year's (*1993-94,* pp. 100-101) work, the Agra Circle of the Survey, under the direction of P.B.S. Sengar, assisted by P.K. Sharan, S.N. Kesarwani, G.N. Srivastava, O.D. Shukla, V.N. Prabhakar, P.K. Dikshit, R.K. Tiwari, S.K. Kulshrestha, C.B. Singh, Y.K. Sharma, R.S. Balodi and N.P. Srivastava carried out clearance at Mehtab Bagh, which is popularly believed to have contained the remains of the black Taj. In the current year, the excavation work was carried out at four particular spots namely (i) the eastern periphery; (ii) the northern periphery; (iii) the central area and, (iv) the octagonal pool area in the southern periphery.

In the eastern periphery, a series of quadrants each of 4.25 m x 4.25 m were excavated (pl. XXXII) which revealed a structure of 25.75 m (N-S) x 4.80 m (E-W) built of *lakhauri* bricks and lime-mortar. Although the structure above the plinth level is completely missing, yet, the plan suggests that it might have been a *bangla* or *baradari* which consisted of an oblong central hall verandah (traditionally having three arched-openings in front and

back), measuring 8.25 m (N-S) x 4.80 m (E-W), flanked by a small chamber on either side, each measuring 3.45 m (N-S) x 4.80 m E-W. The thickness of wall at this level measured 1.25 m. The *bangla* or *baradari* is located on the mid-length of the eastern boundary-wall. A small area in the front of this structure yielded traces of brick pavement overlaid with lime-mortar. The paved ground is found connected with a small platform at a slightly lower level which was ascended through steps on the northern side. The traces of three steps were encountered on this stairway which was constructed with *lakhauri* brick-work and veneered with red sandstone.

The northern periphery of the site, close to the village Kachhpura, had suffered due to the robbing of building material as well as rubble, for spreading on the floors of cattle-pen in the past. The excavation revealed structural remains measuring approximately 14.20 m (E-W) along the boundary-wall and 1.8 m in width towards south, projected from the northern side baulk (or the boundary-wall). The wall remains in the portion had been robbed to a considerable depth and now only its foundation has survived in varying heights. The traces of stone kerbs in the projected portion indicate the existence of a gateway in the northern boundary-wall.

In the central area, thirty-two quadrants have been exposed and the excavation revealed the existence of a masonry tank (pl. XXXIII). Its traces indicate that the tank was externally square. Internally, the tank is almost intact, displaying a marvellous design in execution. The interior of the tank is basically a square with chamfered corner at the bottom. The chamfered portion is superimposed with moulded decoration of cusped design. Each of the cardinal sides measures 6.90 m in complete length but excluding the chamfered portion on both sides, it is 3.90 m. The chamfered face is 2.10 m in length. The traces of a circular pit in the centre of the tank suggest that there was a single fountain in the centre of the tank. The tank was built with *lakhauri* brick-work and has a finely plastered surface. The embankment platform of the tank extended about 5 m from inner face on all cardinal sides. The tank is 1.65 m deep from the top level of embankment. The available evidence shows that the embankment platform was only 1.5 m high from its foundation. However, deep digging in this area revealed an array of wall alignments forming some cell-like arrangements. It is probable that these underlying wall alignments were the remains of some earlier edifice, however, it is assumed that it was a box-foundation provided to the tank. The tank contained an outlet built of terracotta-pipe running through the platform and in the remaining length it is built of brick-work and covered with red sandstone slabs.

The southern periphery of the site is dominated by a large octagonal pool as revealed by the previous as well as present excavation. In the present excavation, ninety quadrants have been exposed which revealed the detailed picture of the pool and associated edifices. Each side of the octagonal pool measured 17.45 m at the inner face and its total interior area amounts to 1469.79 sq m. On the bottom floor of the pool twenty-five circular pits were traced in a particular geometrical pattern. The scooping of two pits ascertained that the pits were meant for fountain spouts and its devices. The fountains were linked with each other by underground pipeline made of glazed terracotta pipes for uniform supply of water. The spouts were made of marble. The pool comprises a very wide embankment wall rising to two terraces. The first terrace bears a plain face while the second terrace has ornate cusped mouldings. The width of the

Plate XXXV



A



B

Bhita: A-B, *general view of structural remains at garhi mound*

embankment wall is 11.80 m. The plan of the embankment wall displays that there was an earth core between the inner and the outer, while casings of brick-work were 4.56 m and 1.93 m respectively. The middle core of earth is 5.40 m. The walled embankment was provided with the *bangla/ baradari* pavilions on southern and northern sides. The *bangla* on southern side is traceable on plan only and shows a central verandah flanked by a chamber on either side. The northern counterpart was also in a similar plan. Though its building material has been robbed ruthlessly, some stone-kerbs and the collapsed-arches found *in situ* position, provide a panorama of the erstwhile graceful pavilion. This *bangla/baradari* was also adorned with a beautiful cascade. The excavation revealed that a channel is running across the verandah opening into a small rectangular tank (9.95 m x 5.55 m x 0.36 m) located just behind the embankment wall. A stone-slab (1.85 m x 0.75 m) carved with twenty-seven alcoves (9x3 rows) was found to the back of the embankment-wall on the route of waterfall (pl. XXXIV). It was noticed that to drain out the water from the octagonal pool there were four outlets at the bottom level. But the surplus water was channelized through the northern arm of the pool and was cascaded into the rectangular tank. This type of cascade is typical of the Mughal style. As per the tradition, the alcoves were lighted with candle lamps to present the glittering view. The rectangular lower tank had drain-outlet at the bottom level, connected with underground covered channel leading towards north. Besides, three slits, each on the three sides to spread the surplus water on the ground, were also found.

The remains of a circular well constructed with *lakhauri* bricks and lime-mortar, located between the central tank and octagonal pool were also brought to light.

The site was covered under a thick deposit of sand. The section indicates two major floods with a considerable gap of time in-between. Each layer was succeeded by a thick wind-borne deposit.

48. EXCAVATION AT BHITA, DISTRICT ALLAHABAD

Under the general guidance of G.T. Shendey, a team of the Lucknow Circle of the Survey, led by S. Jamal Hassan, assisted by Indu Prakash, A. A. Hashmi, Lily Dhasmana, Rajiv Dwivedi, Nayan Anand Chakraborty, Sangita Chakraborty, S.B. Shukla, Shakeel Ahmad, Sultan Singh, Dinesh Goswami, conducted a small-scale excavation at Bhita with a view to ascertaining the pre-NBPW assemblage of this renowned site.

The earliest culture of this mound is represented by a thin deposit of 20 cm. The black-slipped ware dated *circa* eighth to seventh century BC, followed by a well-developed NBPW (1.75 m deposit) dated at the beginning of seventh century BC to second century BC. The uppermost deposit being a limited one, representing Sunga period, roughly dated at the closing of the century. Thus a period of eight hundred years (eighth century BC to first century BC/AD) may broadly be assigned to the mound at Bhita. In the Garha mound, the Kushan deposit is more than 3 m which is not traceable at Garhi mound.

No structural activities were encountered in the lowermost level (BSW) but, three phases of structural activities have been noticed in the NBPW level, which are made of burnt-brick (50 cm x 30 cm x 7 cm), varying in size and plan. The orientation of these structures are east-west, facing mainly west. From mid to the late phase, a large number of structures most of them freely built, were encountered. Squarish rooms (2.45 m x 2.30 m) with provision of window within a rectangular compartment was the notable

feature (pl. XXXV). Covered drain and rammed floor were also noticed within these structures. In the last phase, no definite plan of structure could be encountered, bricks were mainly reused and lacked any proper shape and size. The structural activity of the Kushan period is not well marked in the Garhi mound, but in Garha mound, where deep vertical structure of rectangular walls and cistern having a measurement of 2.10 m x 2.02 m x 0.56 m with thirty-eight courses of bricks deserve special attention.

In Periods I and II, the site yielded finished specimens of black-slipped ware and NBPW along with a few pieces of grey and associated red wares. But the appearance of NBPW in Period II showed colour variations, ranging from black and grey to brown and a few pieces of golden to yellow having highly lustrous polish. Other associated wares include chocolate ware, orange ware, black-and-red ware. Even Ahichchhatra XA type pottery and miniature bowls were found from this level in a greater quantity.

A good number of antiquities, mainly in terracotta, copper, bone, and stone have been recovered. Among the terracotta objects, the most important are human and animal figurines, beads, rattle, wheel, stopper, weight, toycart, hopscotch, etc. Few copper coins (much defaced) and a number of antimony rods, bone points of various nature, needles, few iron slags and a few beads of semi-precious stones, were other important finds that deserve mention.

49. EXCAVATION AT KHAIRADIH, DISTRICT BALLIA

In continuation of the previous (1980-86) work, excavation was resumed at Khairadih (26° 10' N; 83° 15' 30" E) located on the bank of River Ghaghara, by the Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi, under the direction of Vibha Tripathi and B.P. Singh, assisted by R.N. Singh, A.K. Singh, S.K. Singh and Jairam Singh. The digging was undertaken with a view to exposing the settlement system of the earliest period (Chalcolithic black-and-red ware) and Kushan period besides imparting training to the students of post-graduate and diploma in Archaeology.

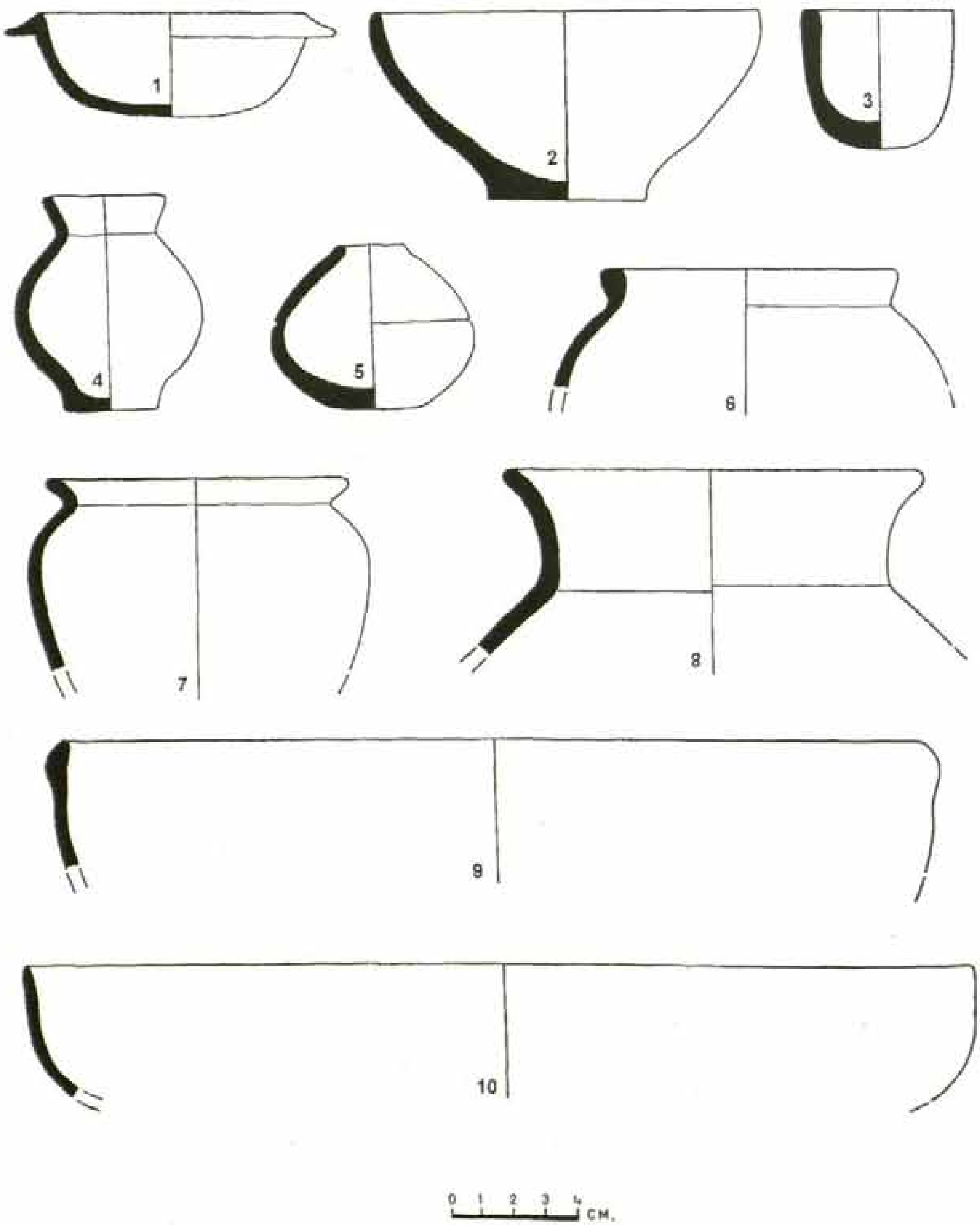
Two areas, KDH-10 and KDH-11 with four squares measuring 4 m x 4 m and one square of 4 m x 4 m area respectively, both having east-west orientation were taken up for excavation. Though the excavation was conducted in limited scale, it yielded some interesting results. A copper working area with a forge was exposed on the fringes of the existing mound (a large area appears to have been washed away by the river). A large number of coins, ores, slags, ochre pieces, charred-wood, etc., were found in the vicinity. Another interesting find was a tile-kiln with a sizeable number of tiles found *in situ.*

Period I yielded black-and-red ware, comparable to other sites of eastern Uttar Pradesh and Bihar. Animal bones and charred grains were found from the floor area. The most significant find pertaining to this period is steatite micro-bead.

Period II at the site has been divided into two sub-phases *viz.,* early and late NBPW. Unlike the previous excavations, only a small percentage of high grade NBPW sherds could be found.

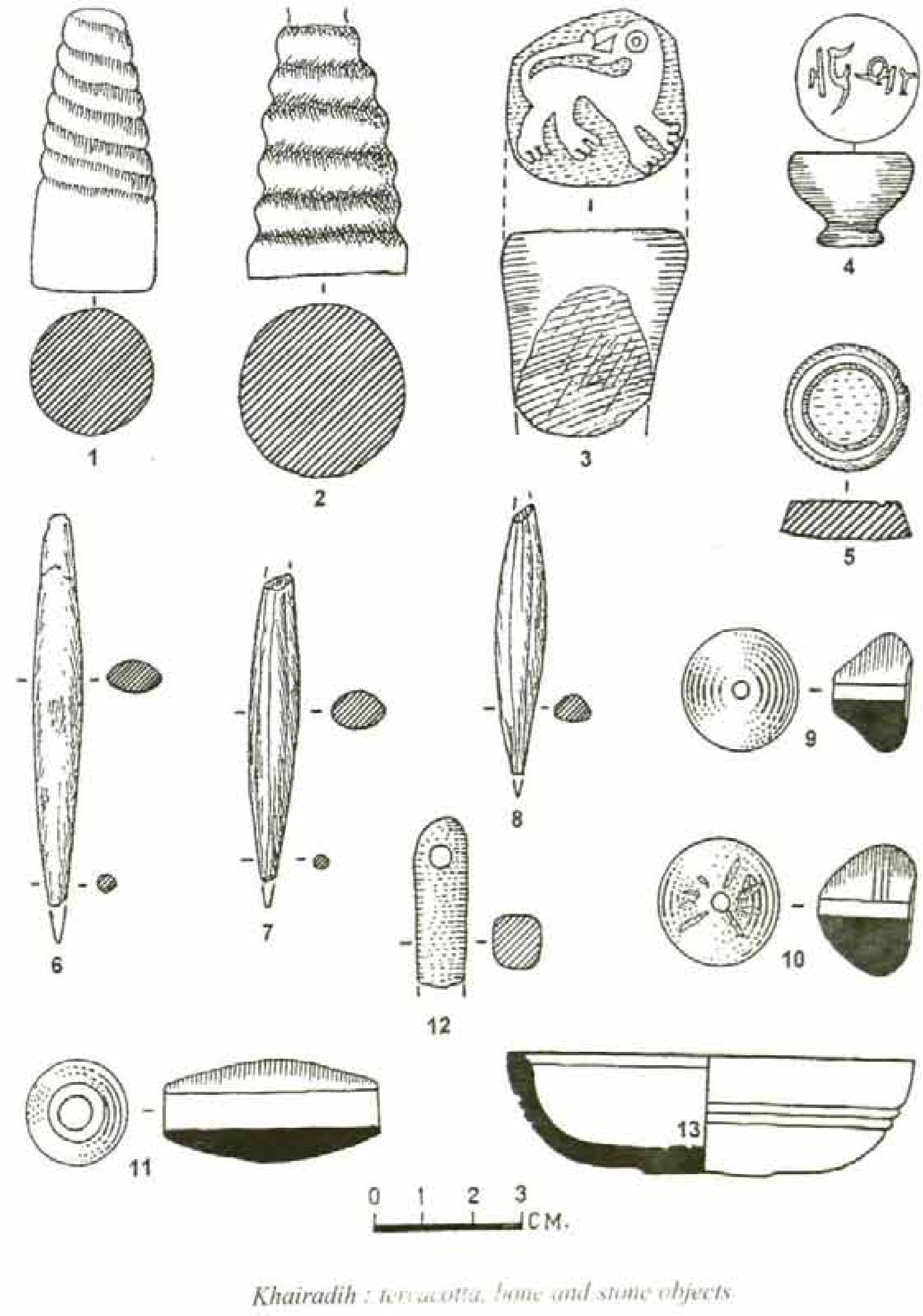
In the late phase of NBPW, just below the Kushan structure, a copper furnace/forge was found in KDH-11 (B.S. 1.70 m, layer 2). It yielded approximately sixty-five coins, many of these are in a fragile state, almost totally oxidized. A large rectangular tile-kiln of burnt-clay and bricks with rounded comers was exposed at the bottom of layer 3.

Fig 8



Khairadih : pottery from period II and III

Fig 9



Khairadih : terracotta, bone and stone objects

It measured 2.40 m E-W, 2.20 m N-S. It had a bowl-shaped base with a depth of 40 cm. There was another circular structure inside this outer enclosure which was 1.20 m E-W and 1.40 m N-S and 65 cm deep. A sizeable number of bright red tiles were found inside as well as on top of this kiln.

Among the smaller finds of this period, mention may be made of beads of glass, semi-precious stones, ivory and terracotta. Copper red glass found along with glass bangles attest to a local glass making industry. Terracotta discs, balls, broken figurines-both human and animals have also been found.

Period HI belongs to Kushan period. Residential buildings of varying dimensions, were traced. Three distinct structural phases were noticed. Due to limited area of excavation, no complete house plans could be detected. However, two rooms with paved floors were brought to light. One of the walls belonging to phase I was 2.80 m long. In phase II, 8.00 m long wall was traced but other end could not be exposed. In phase III, a complete room with 6.10m EW, 3.55 m NW was exposed. There was a paved floor with post-holes in the bricks. The bricks measure 42 cm x 22 cm x 6 cm. A very long wall (22 m) with the other end not traceable speaks of the massive building of which it formed a part. In the adjacent structure on the northern side, two cylindrical storage-pots belonging to phase III were found buried in the floor.

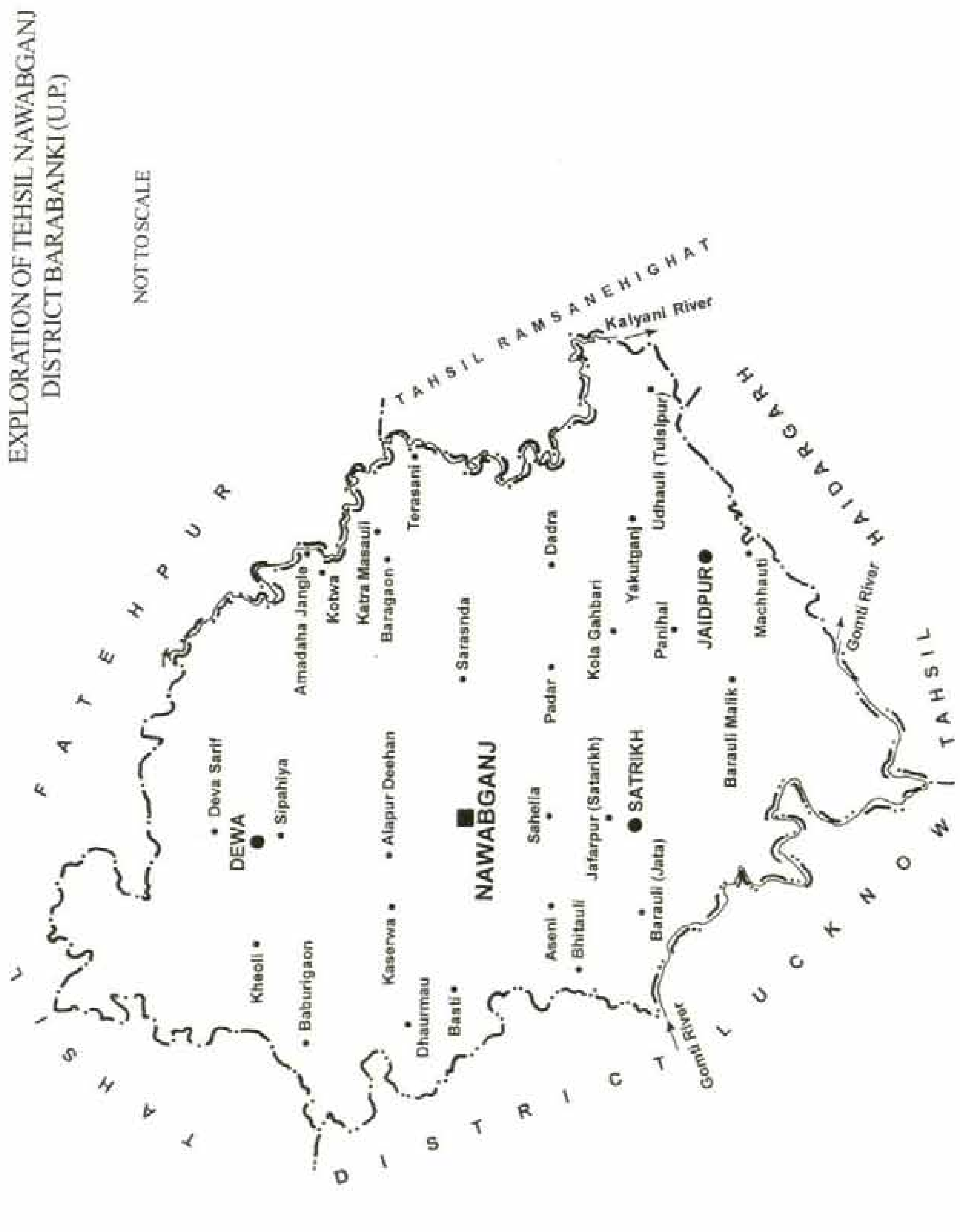
Besides the structures, ceramics (fig. 8), a large number of terracotta human figurines, stamps, seal, stoppers, pendants, crucibles, etc., of Kushan period were found apart from metal objects in the form of copper and iron (fig. 9).

50. Exploration in Nawabganj Tehsil, District Barabanki

Devi Prasad Tewari of the Department of Ancient Indian History and Archaeology, University of Lucknow, Lucknow, conducted exploration of Nawabganj tehsil and located the following sites of historical importance (fig. 10).

Village/Site	*Nature of remains*
Ahmadpur	Red ware (early medieval)
AlapurDeehan	Red ware, black-slipped ware, grey ware, NBPW; early medieval red ware
Amadaha jangle	Red ware, black-and-red ware, early medieval red ware
Aseni	Red ware (medieval)
Baburigaon	Red ware, glazed ware, stone sculptures and a temple (Gupta and medieval)

Fig 10

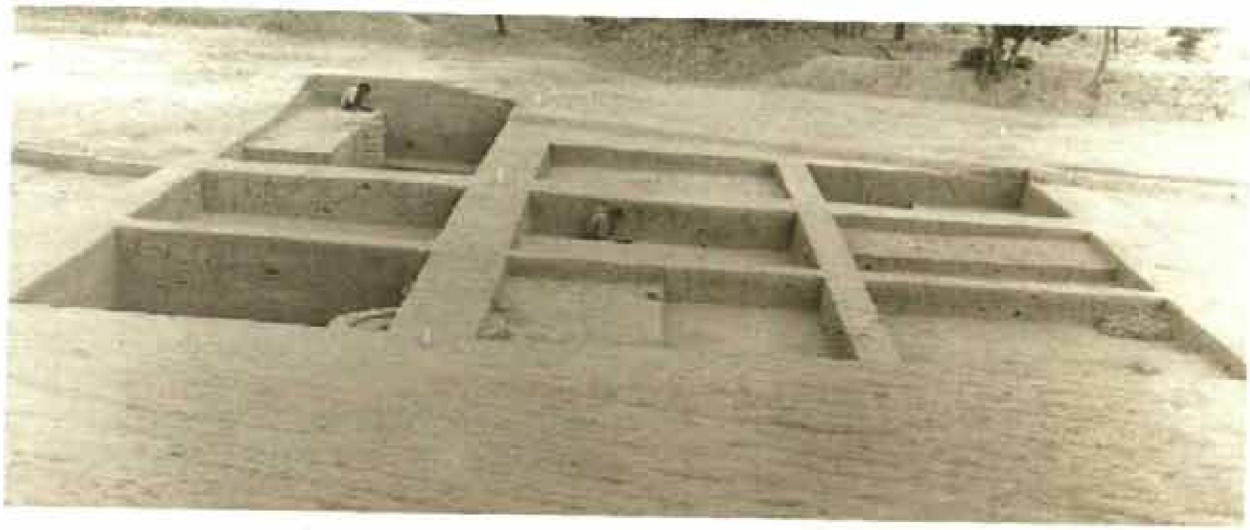

EXPLORATION OF TEHSIL NAWABGANJ
DISTRICT BARABANKI (U.P.)
NOT TO SCALE
TAHSIL RAMSANEHIGHAT
Kalyani River
TAHSIL FATEHPUR
HAIDARGARH
Gomti River
TAHSIL
LUCKNOW
DISTRICT
Gomti River
Deva Sarif
DEWA
Sipahiya
Kheoli
Baburigaon
Kaserwa
Alapur Deehan
Dhaurmau
Basti
NAWABGANJ
Sahelia
Aseni
Bhitauli
Jafarpur (Satarikh)
SATRIKH
Barauli (Jata)
Padar
Sarasnda
Amadaha Jangle
Kotwa
Katra Masauli
Baragaon
Terasani
Dadra
Kola Gahbari
Yakutganj
Udhauli (Tulsipur)
Panihal
JAIDPUR
Barauli Malik
Machhauti

Village/Site	Nature of remains
Baragaon	Red ware (medieval)
Barauli (Jata)	Red ware, black-and-red ware, glazed ware, black slipped ware
Barauli Malik	Red ware, black-and-red ware (Kushan, Gupta and early medieval)
Basti	Red ware, black-and-red ware, stone sculpture (Kushan and Gupta)
Bhitari (Ahmad Nagar)	Grey ware, black-and-red ware, black-slipped ware, red ware, glazed ware, temple and mosque
Bhitauli	Red ware, black-and-red ware, medieval red ware
Dadra	Red ware, black-and-red ware, early medieval and medieval red ware
Deva Sarif	Red ware and mosque
Devkalian	Early medieval red ware
Dhaurmau	Early medieval red ware
Hinduwani	Medieval red ware
Ibrahimabad	Red ware, black-and-red ware (medieval)
Jafarpur (Satarikh)	Red ware (early medieval)

Village/Site	Nature of remains
Jaganehta (Kothi Deeh)	Red ware (Gupta and early medieval)
Jakarta	Red ware, black-and-red ware, black-slipped ware, Gupta and early medieval red ware
Jamwant Baba-ki-kuti	Red ware, black-slipped ware, Gupta and early medieval red ware
Karera (Shanpur)	Red ware, black-and-red ware (early medieval)
Karmullahpur	Red ware (early medieval)
Kaserwa	Black-slipped ware, red ware, glazed ware, red and black ware (Sunga-Kushan, Gupta and medieval)
KatraMasauli	Red ware, black-and-red ware (early medieval)
Kheoli	Red ware, black-and-red ware, black-slipped ware, glazed ware, Gupta and early medieval red ware
Kola Gahbari	Black-slipped ware, red ware, black-and-red ware, Gupta and early medieval red ware
Kotwa	Red ware, black-and-red ware (early medieval)
Machhauti	Red ware, black-and-red ware (early medieval)
Mohammadpur Vishunpur (Fatehpur)	Red ware and temple of late medieval period Red
Muski Nagar	ware, black-and-red ware (early medieval)

Village/Site	*Nature of remains*
Nanmau	Red ware, black-and-red ware (early medieval)
Padari	Red ware, black-and-red ware (early medieval)
Panihal	Red ware, black-and-red ware (early medieval and medieval)
Piparauli	Red ware, black-and-red ware (early medieval and medieval)
Pratapganj	Red ware (medieval)
Powari	Red ware, black-and-red ware (early medieval)
Rasauli	Red ware, black-and-red ware (early medieval and medieval)
Sahelia	Red ware (early medieval)
Sahiyari	Red ware, glazed ware (medieval)
Sarasnda	Black-slipped ware, red ware, black-and-red ware, Gupta and early medieval red ware
Siddheshvar Mahadev	Red ware and temple of late medieval period Red
Sipahiya	ware, black-and-red ware, glazed ware (medieval)
Sultanpur	Red ware, glazed ware, black-slipped ware (early medieval)

Plate XXXVI



A



B

Siswania: A, *excavated trenches;* B, *cutting across the mound (SWN-1)*

Village/site	*Nature of remains*
Tamarshapur	Red ware (early medieval)
Terasani	Red ware (early medieval)
Turkani	Glazed ware, red ware (medieval)
Udhauli (Tulsipur)	Remains of tank (late medieval)
Ultideeh	Grey ware, black-slipped ware, black-and-red ware, red ware (pre NBPW and Mauryan to Kushan)
Umara (Fatehpur)	Black-slipped ware, red ware, black-and-red ware, glazed ware, Gupta and medieval red ware
Yakutganj	Red ware (early medieval)

51. EXCAVATION AT SISWANIA, DISTRICT BASTI

In continuation of the previous season's work (*1995-96,* pp. 83-86), Excavation Branch II, New Delhi, of the Survey, under the direction of B.R. Mani, assisted by Vishnu Kant, R.K. Verma, Ajay Kumar Srivastava, B.K. Chauhan, L.S. Mamani, V.P. Verma, Y.S. Nayal, Vinod Kumar, R.S. Rana, Ajai Kumar, Virendra Pandey, T.Z. Dani, Suresh Chaudhary, D.N. Yadav and Mohan Sharma, resumed excavation at the main mound SWN-1 with the objective to know more about the lay out and settlement pattern of the site and its material culture. In all twenty-two quadrants of thirteen squares with each square measuring 10 m x 10 m were fully or partly excavated (fig. 11; pl. XXXVI).

It was observed that the early settlements of the site were located closer to the River Kuwana (Kuwano) on its left bank and with the increase of population and building activities during the Kushan period the settlement spread towards east. Although no structural remains of pre-NBPW phase could be located, structures of NBPW phase and Sunga period were mostly mud structures with floors having post-holes suggesting thatched roofs (pl. XXXVII A). Brickbats, occasionally found in heaps of debris from these levels provide evidence of some rich constructions.

Building activity increased to a great extent during the Kushan period when burnt-brick structures were erected, but this being the last period of activities at the site, the structures have been badly damaged mainly due to levelling of the lands for agricultural purposes in recent years as evident from the spread of brick debris throughout the top layers.

Fig 11

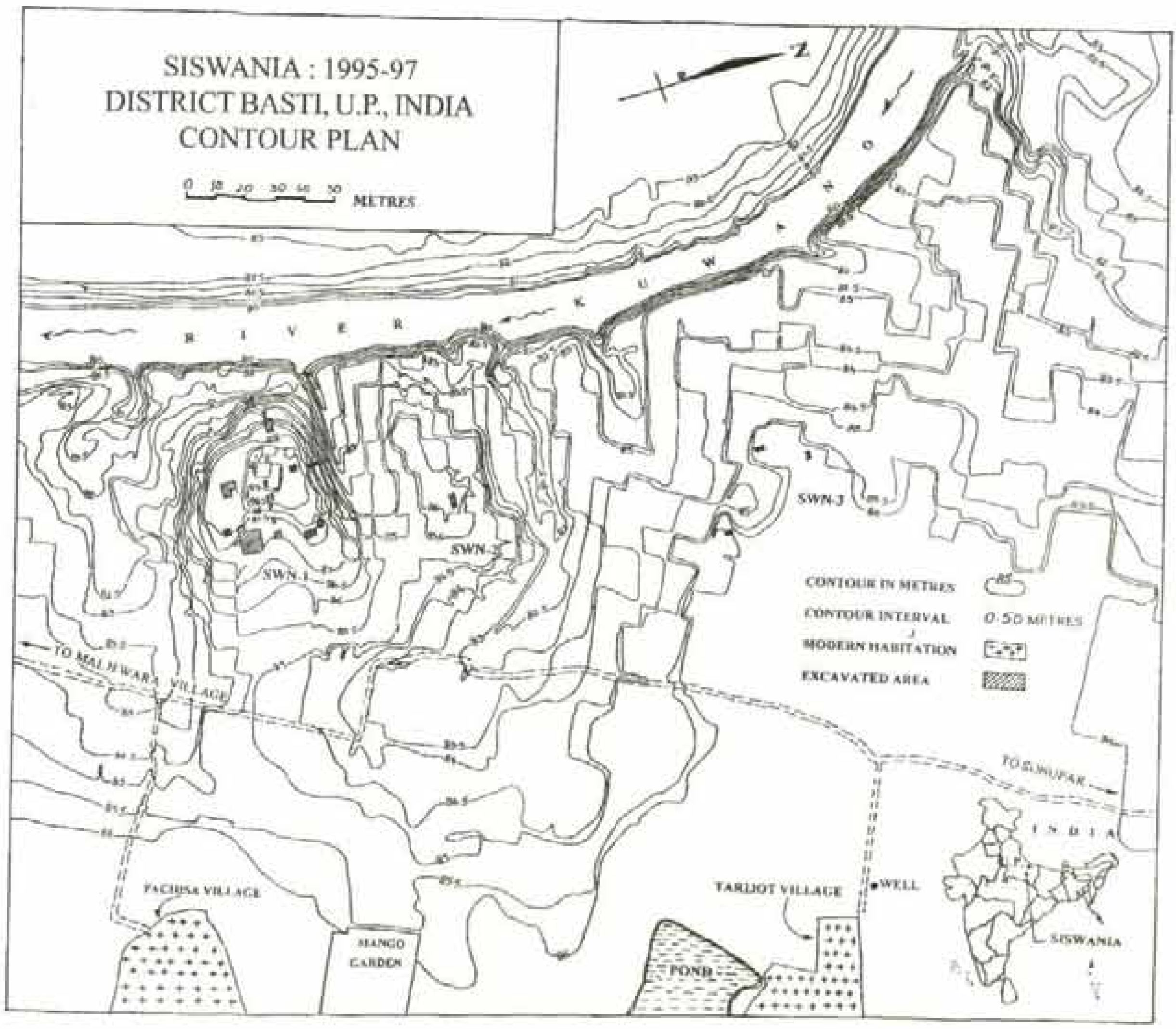
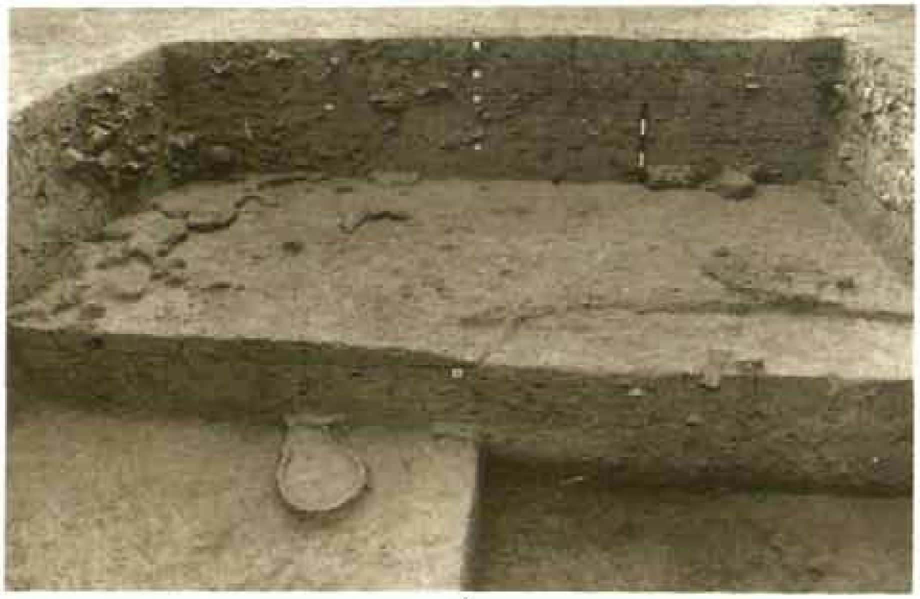

SISWANIA : 1995-97
DISTRICT BASTI, U.P., INDIA
CONTOUR PLAN
METRES
N
RIVER KUWANO
SWN-1
SWN-2
SWN-3
CONTOUR IN METRES
CONTOUR INTERVAL 0.50 METRES
MODERN HABITATION
EXCAVATED AREA
TO MALHWARA VILLAGE
TO SUHUPAR
PACHISA VILLAGE
MANGO GARDEN
POND
TARIJOT VILLAGE
WELL
INDIA
SISWANIA

Plate XXXVII



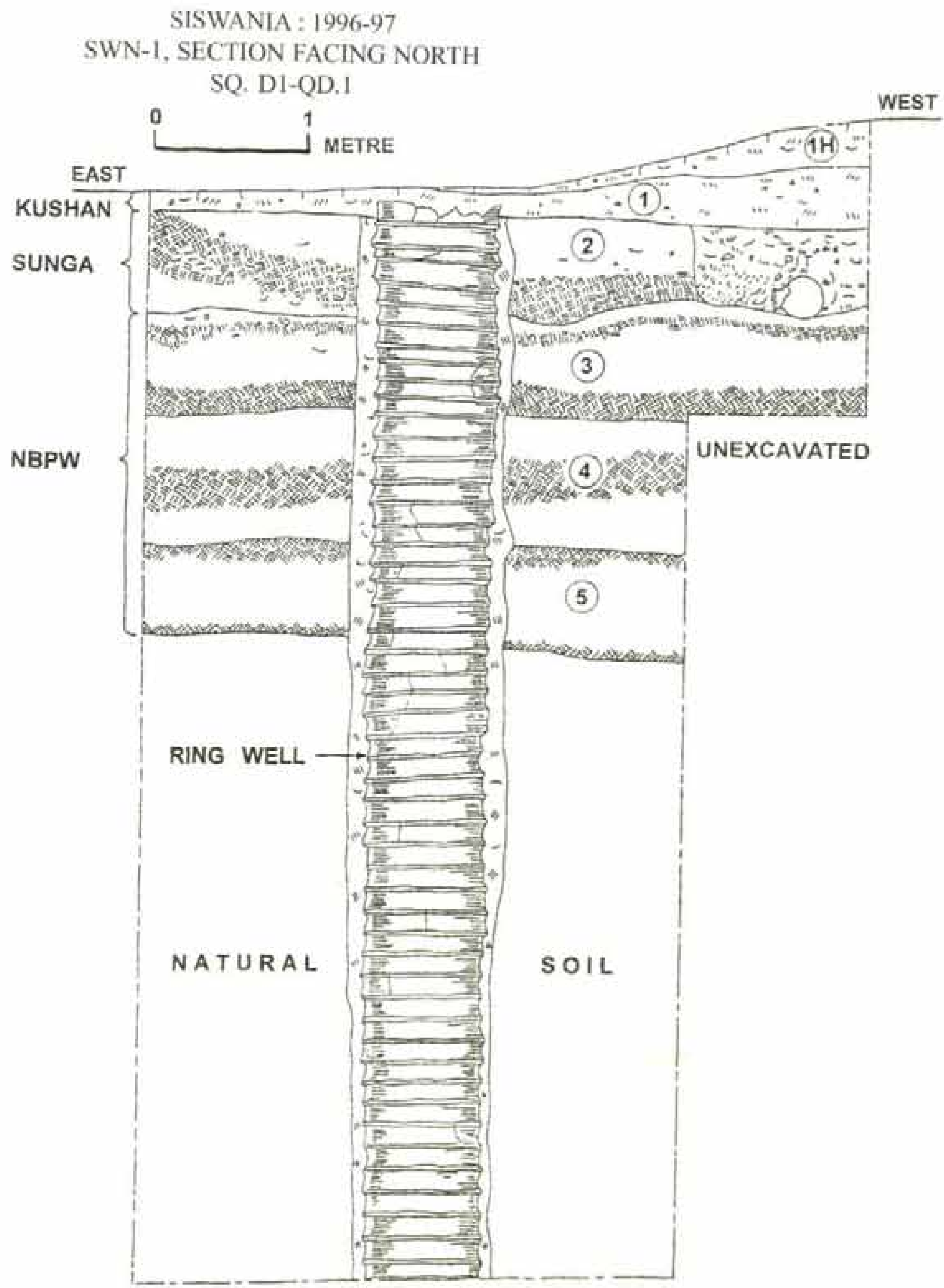
A



B

Siswania: A, pre-Kushan floor with post-holes; B, Kushan ring-well

Fig 12


SISWANIA : 1996-97
SWN-1, SECTION FACING NORTH
SQ. D1-QD.1
0
1
METRE
EAST
WEST
KUSHAN
SUNGA
NBPW
1H
1
2
PIT
3
4
5
UNEXCAVATED
RING WELL
NATURAL
SOIL

Three ring-wells (pls. XXXVIIB and XXXVIII) and a brick-well were found during excavations which all belong to the Kushan period. Amongst the three ring-wells, one was exposed in Qd 1 of Sq D1 cut through earlier levels with fifty-two rings, each being 13 cm to 15 cm in height with the diameter of 80 cm (fig. 12). Lime was used to seal the gaps between them and they were sunk upto the water table. The brick-well (pl. XXXIX A) was exposed in Qd 2 of E1 and Qd 3 of ZE 1 with fifty-seven courses of wedge-shaped bricks measuring 26 cm x 24 cm to 30 cm x 8 cm. These structures of Kushan period found on the eastern slope of the mound suggest existence of the residential area there. Towards north-west of this, around the highest part of the mound and to the north of the Ram-Janaki Temple, remains of a workshop of metal smiths was located which existed from the late levels of NBPW phase to the Kushan period. Slags, complete and broken pieces of crucibles and metal pieces of iron and copper were found besides hearths of various shapes and size in Qd 4 of Sq ZA5 (pl. XXXIX B).

Pottery as noticed during the previous year's excavation was again found with some more shapes. The pre-NBPW levels contained red ware, black slipped ware and black-and-red ware including a few sherds with white or black strokes painted over them. These types without paintings continued along with NBPW in the next phase. Ceramics of Sunga and Kushan periods were mainly red ware, both plain as well as slipped. The typical dishes and bowls of NBPW and pre-NBPW phases disappeared during Sunga and Kushan periods when incurved bowls became diagnostic type. The Kushan period red ware also included basins, cooking pots, ink-pot lids, spouted pots, sprinklers, handled pots, pans and vases.

More than six hundred and fifty antiquities were found in the form of terracotta plaques, human and animal figurines, pestles, ear-studs, toy-carts, wheels, wheel-cum-pendants, balls, dabber, net sinker, rattle, whistle, discs, tablets, stopper, stamp, *ghata-and* arecanut-shaped beads, bangles and other miscellaneous objects, bone point, and arrow-heads, bone and ivory wheels, crucibles, stone objects, iron objects, semi-precious stone beads, glass beads, bangles and copper objects. Amongst the important antiquities, mention may be made of Mauryan and Sunga female and Yakshi figures on terracotta plaques, Sunga *gaja*-Lakshmi plaques, Mauryan and Sunga elephant figurines, Kushan bull, horse, a horse-rider and bird-shaped toy-carts, a hoard of one hundred and thirty-five fragmentary bone points, gold plated earring, copper antimony rods, beads, bangles and a ring with a lion figure belonging to the Maurya-Sunga times. Fifty silver and copper coins were found from different levels including the punch-marked coins, uninscribed cast copper coins, coins of Ayodhya rulers including those of Dhanadeva and Kushan coins in copper.

More than four thousand animal remains from the site were studied by U.C. Chattopadhyaya of the University of Allahabad. The animal taxa identified include Zebu, i.e., humped Indian cattle *(Bos indicus),* buffalo *(Bubalus bubalis),* horse (*Equus caballus),* sheep/goat *(Ovis/Capra),* spotted deer *(Axis axis),* antelope *(Antelope sp),* wild boar *(Sus scrofa),* domestic pig *(Sus scrofa cristatus),* pigmy hog (Sus *silvanius),* dog *(Canis familiaris),* cat *(Felis sp.),* hare *(Lepus sp.),* common rat *(Rattus rattus),* bandicoot rat *(Bandicota bengalensis),* tortoise (at least two species-*Chitra indicus* and *Trionyx gangeticus)* and fish of large, medium and small size, and Aves including fowl *(Gallus galliformes).*

The overall picture from the lowest to the uppermost levels at the site suggests a predominantly

Plate XXXVIII



A



B

Siswania: A-B, *Kushan ring-wells*

Plate XXXIX



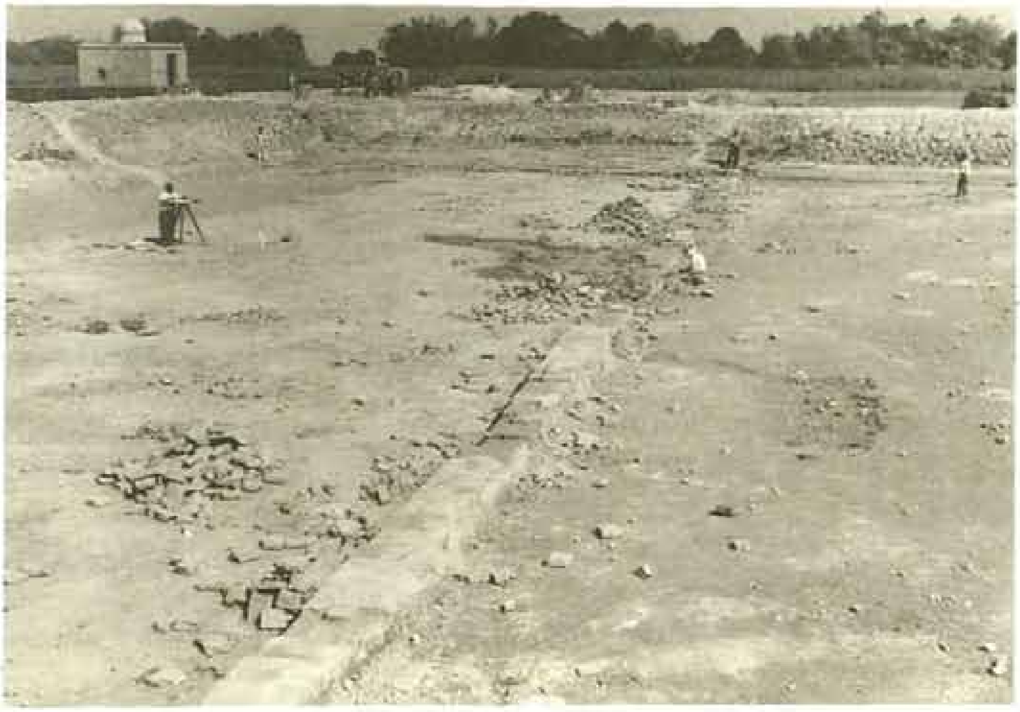
A



B

Siswania: A, *Kushan brick-well;* B, *hearth*

Plate XL



A



B

Mundiar: A-B. *Kushan tank*

domesticated economy in which cattle bones have the largest representations. Other domesticated animals include sheep/goat, pig, dog and cat. A large specimen (a molar) of horse from layer 7 of Trench ZA3 (Quadrant 3) suggests that domesticated horse was introduced in this area. At the same time aquatic animals, like tortoise and fish, constituted an important source of human diet. The remains of bandicoot rat and common rat suggest well settled life, associated with storing grains. A few wild animals were also hunted including wild boar, pigmy hog, deer and antelope.

The fact that most of these species (excluding perhaps dog and cat) constituted items of human diet as is shown by the characteristic cut and chopping marks observed in the bones. Another important feature of faunal assemblage is the occurrence of worked bones. A number of pieces from cattle metatarsus (compact tissue) were flaked to give shape of bone tools.

52. Exploration in Districts Basti and Siddharth Nagar

In continuation of the previous season's explorations (*1995-96,* p. 86), B.R. Mani of the Excavation Branch II, New Delhi, of the Survey, while camping at Siswania excavation camp and occasionally assisted by Vishnu Kant, R.K. Verma, Ajay Kumar Srivastava, L.S. Mamani, V.P. Verma, Y.S. Nayal, Vinod Kumar, R.S. Rana, Virendra Pandey and T.Z. Dani explored eighty-one archaeological sites out of which sixty-nine were found to be new discoveries. S.D. Ojha, K.D. Srivastava and Rajendra Prasad Tripathi helped in locating the sites. An important achievement was the discovery of Buddhist stupas at ten sites at Hansudi, Barhari Gaura, Behil I, Baksari-Banni, Khajura Khurd, Katesar, Bhangura, Chetia, Bharat Bhari II and Thalapar besides further investigations at the stupa sites of Birdpur and Rampur Reoti. Another important discovery was of a very large tank of Kushan period at Mundiar, 3 km east of Rudhauli where the exposed parts of the southern and eastern walls of the tank were found to be 60 m and 22.5 m respectively (pl. XL) constructed of typical Kushan bricks measuring 40 cm to 41 cm x 20 cm to 21 cm x 6.5 cm to 7 cm. Twelve courses of burnt-brick wall of the longer axis of the tank were exposed in the exploratory sounding measuring 1.50 m x 1.50 m, the last two courses of the wall were found buried in the natural soil and the silt deposit was noticed over it upto fifth course of the wall. About 500 m east-south-east of the tank, a habitational site was discovered at village Dakharwa, the cultural assemblage of which goes back to the Kushan period. More than one hundred copper coins of the rulers of Ayodhya and Kushan coins of Vima Kadphises, Kanishka and Huvishka were collected from different sites.

Explored sites with their cultural assemblages are as under:

Village/Site	*Nature of remains*
Ajanv (4 km south of Chhitahi)	Medieval red ware
Amilahwa (42 km north-east of Basti and 2 km south of Mehdawal)	Black-and-red ware and red ware of Kushan period

Village/Site	***Nature of remains***
Aosara (1 kmwestof Ghosiari)	Medieval red ware
Arail (12 km north of Basti)	Kushan red ware, medieval brick well
Bahera Mafi (52 km north-east of Basti)	Medieval Siva Temple with a (thirty-four line) Sanskrit inscription, *chaturmukha Siva-linga* and sculptures of Surya, Rahu, Ganesa, devi and Nandi
Baksari-Banni (1 km east of Thokawa)	Site (200x200 m) with a circular brick structure of about 40 m diameter, perhaps a stupa; stone sculpture of Mahishasurarmardini, NBPW, black-and-red ware, black-slipped ware, grey ware and Kushan red ware and brick (43 cm x 27 cm x 6 cm)
Baksari II (200 m south-east of Baksari-Banni)	Medieval brick structure and red ware
Bankechor Bargadwa (39 km north of Basti)	Medieval fort and temple
Barhari Gaura (65 km north of Basti)	Kushan-Gupta red ware, probably a stupa, dia 30 m
Baudhara (3 km east of Tedhawa)	Medieval well and Samai Than
Behil I (500 m north of Hatwa II)	Temple of Behilnath (modern) constructed on an ancient circular brick structure of about 3 m in height with bricks measuring 33 cm to 34 cm x 22 cm x 5 cm to 6 cm; more brick structures and ceramics

Village/Site	*Nature of remains*
	towards its west including black-slipped ware, grey ware, degenerated NBPW, fine red ware and Kushan red ware and parts of ring-well. The site is identifiable with an ancient monastery of *grama-nigama* of Kosala called *Vehalinga* or *Vebhalinga* where Buddha preached the *Ghatikara Sutta* as contained in *Majjhimanikaya*
Behil II (300 northof Behil I)	Mound (250 m x 250 m) with black-slipped ware, grey and red wares, the probable site of the *grama-nigama* of *Vehalinga*
Belava (52 km north east of Basti)	Kushan red ware
Bhadana (11 km north-west of Basti)	Red ware of Kushan and medieval periods
Bhangura (13 km north of Basti)	Circular brick structure (dia 5 m) and Kushan red ware
Bharat Bhari I (8 km north-east of Doomariaganj)	Black-slipped ware, black-and-red ware and Kushan red ware; structures with bricks (35 cm * 24 cm * 6 cm), terracotta human and animal figurines
BharatBhari II (500 m north-west of Bharat Bhari I)	Two circular brick mounds (dia 40 m and 18 m respectively), supposed to be stupas, *Siva-linga* and to the south is a habitational site with Kushan red ware
Bhaukhari (29 km north of Basti)	Kushan, Gupta and post-Gupta red ware, sand stone headless sculpture of Jaina Mahavira, glazed ware of medieval period

Village/Site	***Nature of remains***
Bhelwal (11 km south-west of Basti)	Kushan and medieval red ware, glass bangles, bricks (35 cm x 22 cm x 6 cm and 29cm x 22 cm x 6 cm)
Birdpur (9 km south of Piprahwa)	Brick stupa
Chando Tal (14 km south-west of Basti)	Medieval red ware
Chetia (500 m north-west of Dasia)	Mound (80 m x 80 m) with a height of 4.5 m seems to represent a stupa *(chetiya)* corresponding to the name of the village. About 100 m north-west of it is located the habitational area with black-slipped ware, grey ware, black-and-red ware and early, Kushan and medieval red wares
Chhardahi (1 km east of Devdand)	Late medieval Siva Temple
Chhitahi (31 km south-east of Basti)	Medieval brick structures and red ware
Chhitahi-Majharia (300 m west of Kotia)	Red ware, glazed ware, broken lower part of Mahishasuramardini
Dasia (60 km north of Basti)	Red ware of Kushan and medieval periods
Deokali (2 km west-north-west of Yashoval)	Black-slipped ware, grey ware and red ware of early, Kushan and medieval periods; a Sunga terracotta plaque

Village/Site	***Nature of remains***
Devdand (2 km east of Gaighat)	Kushan red ware and terracotta pestle, sling-ball and dabber
Dhaurahra (2 km north-east of Hansudi)	Kushan terracotta, red ware and brick (54 cm 24 cm x 6 cm) and brick structures
Dhuriadih (2.5 km north of Mehdawal)	Kushan and medieval red ware
Gabha (1 km north of Itauwa)	Kushan red ware
Gaighat (26 km south of Basti)	Medieval *Siva-linga*
Gana (10 km east of Kalvari)	Kushan red ware, post-Gupta stone sculptures of Ganesa and Vishnu
Ganauna (Gangauri) (23 km south-east of Basti)	Kushan red ware and terracotta pestles
Ganavar (63 km north of Basti)	Medieval Siva Temple
GauraRohari (30 km south of Basti)	Kushan red ware
Gedar (3 km north of Thokawa)	NBPW, black-slipped ware, grey ware and red ware of early and Kushan period
Gharighat (500 m south-west of Katesar)	Black-and-red ware, red ware of early and Kushan period, carnelian beads

Village/Site	***Nature of remains***
Ghosiari (3 km north of Bahera Mafi)	Medieval red ware and glazed ware
Hatwa I (16 km south-east of Basti)	Early medieval red ware and circular floors
Hatwa II (200 m north of Hatwa 1)	Early medieval red ware
Hansudi (1.5 km north-west of Ganavar)	Kushan red ware, area approximately 200 sq m with brick structure of a stupa (dia 40 m and height 7 m)
Imlidiha (300 m south-east of Dasia)	Red ware of Kushan period, terracotta animal figurines and beads, glass bangles
Itauwa (5 km east-north-east of Khajura-Khurd)	An extensive mound (500 m x 300 m) with brick structures and ring-wells; black-slipped ware, NBPW, grey ware and red ware of early and Kushan period
Jogiya I (62 km north-east of Basti)	Degenerated NBPW, Kushan and Gupta red ware
Jogiya II (1 km east of Jogiya I)	Medieval temple of Yogamaya
Kalvari (18 km south of Basti)	Late medieval temple and tank
Kanwar-Kanwari (2 km north of Yashoval)	Kushan red ware, brick structures with brick (34 cm x 24 cm * 6 cm)

Village/site	*Nature of remains*
Karahna (1 km east of Kanwar-Kanwari)	NBPW, black-and-red ware, black-slipped ware, grey ware and red ware of early and Kushan period
Katesar (4 km north-west of Arail)	Circular brick mound (dia 30 m) with bricks (28 cm x 20.5 cm x 5 cm), supposed to be a stupa and some red ware sherds of Kushan period
Khajura Khurd (2.5 km south-east of Karahna)	A circular brick mound (dia 30 m and height 2.5 m) supposed to be a stupa with red ware of Kushan period in its vicinity
Kotia (1 km west of Pala)	Kushan red ware, medieval red ware and glazed ware
Kusauna Khurd (47 km north-east of Basti)	Black-slipped ware and red ware of Kushan period
Loharauli-Sonaura (1.5 km north of Mehdawal)	Kushan red ware, post-Gupta sandstone sculpture of Ganesa
Madain (3 km east-north-east of Bhangura)	Kushan and medieval red ware, bricks (39 cm x 21.5 cm x 11 cm and 38 cm x 21 cm x 11 cm)
Majhauwa (400 m west of Gharighat)	Kushan red ware
Meerganj (29 km east of Basti)	Kushan and medieval red ware and bricks (35 cm x 22.5 cm x 6cm)
Mundiar I (33 km north of Basti)	Kushan water reservoir and red ware

Village/Site	***Nature of remains***
Mundiar II (Dakharwa) (500 m east of Mundiar I)	Kushan red ware, grey ware, glazed ware and terracotta ring-well
Mundiari (3 km west of Ajanv)	NBPW, red ware, terracotta pestles and dabber
Naugarh (1 km east of Othganpur)	Early medieval red ware, glass bangles and terracotta balls
Othganpur (3.5 km south-west of Basti)	Early medieval red ware
Pala (4 km north of Bahera Mafi)	Late medieval indigo factory
Paun (23 km south of Basti)	NBPW, black-slipped ware, grey ware and red ware of Kushan period, terracotta pestles and bricks (40 cm x24cmx 6cm; 38 cm x 22 cm x 7cm; 38 cm x 24.5 cm x 6 cm and 35 cm x 21 cm x 6 cm)
Pipra Gautam (1 km east of Bhelwal)	Kushan and medieval red ware and brick
Ramnagar (500 m west of Barhari Gaura)	Kushan red ware and brick (28 cm x 28 cm x 8.5 cm)
Rampur (1 km north of Gana)	Degenerated NBPW, grey ware, Kushan and medieval red ware

Village/Site	***Nature of remains***
RampurReoti (5 km south of Thalapar)	Modem temple housing post-Gupta damaged stone sculptures over a circular mound (dia 30 m) with brick structures suggesting a stupa; decorated bricks of post-Gupta period found reused in a modern circular structure
Selhara (1 km east of Thokawa)	Red ware of Sunga-Kushan and medieval periods
Shankarpur (26 km south-east of Basti)	Kushan red ware
Siktaur I (49 km north-east of Basti)	Remains of a late medieval indigo godown
Siktaur II (100 m north of Siktaur I)	Kushan red ware
Siswa (3.5 km north-east of Bhaukhari)	Medieval fortress
SiyaraJhunri (1.5 km south-east of Pala)	NBPW, black-slipped ware and red ware of Kushan period
Tedhawa (49 km north-east of Basti in Bakhira Tal)	Red ware of medieval period
Thalapar (1 km east of Ganauna)	Two circular brick mounds, presumably stupas, Kushan red ware and terracotta pestles

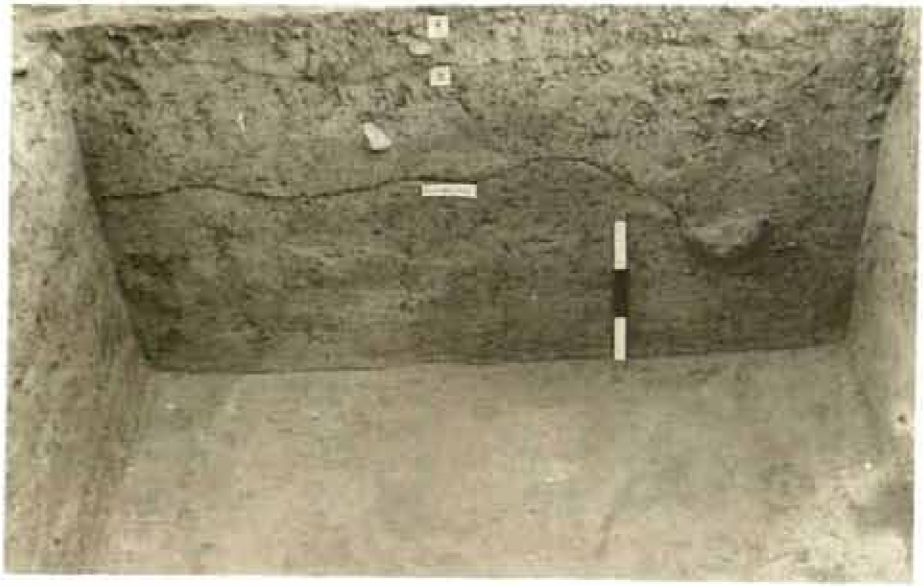
Village/Site	*Nature of remains*
Thokawa (27 km south-east of Basti)	Kushan red ware
Udsara (37 km east of Basti)	Kushan red ware and bricks (40 cm x 23 cm 6.5 cm)
UchahraKalan I (1 km east of Madain)	Kushan red ware, structures with bricks (39 cm x 21.5 cm x 11 cm, 38 cm x 22 cm x 6 cm) and terracotta human figurines
Uchahra II 500 m south-west of Uchahra Kalan	Kushan red ware
Yashoval (Jaswal) (54 km north-east of Basti)	Kushan-Gupta red ware, sculpture of Surya and remains of a medieval brick temple

Trial-excavation was carried out at Pipari (26° 50' 6" N; 82° 58' 30" E), 42 km north-east of Basti, in a trench measuring 2 m x 1.5 m, to know the cultural sequence of the site in view of earlier findings of various shapes in fine red ware, black-slipped ware, black-and-red ware, NBPW and grey ware from the site. The cultural deposit was found to be only 37 cm thick having two distinct layers below which was natural soil (pi. XLI A). Similar result was found from section scraping and it was confirmed that the site represents a single culture site datable to about sixth century to third century BC.

Trial-excavation was also carried out at Orai (26°44'30"N; 82°48'20"E), 15 km south-east of Basti, in a quadrant measuring 4.25 m x 4.25 m, to know the cultural sequence of the site. The cultural deposits of 2.72 m revealed a sequence of two periods represented by red ware and brick structures of Kushan (pl. XLI B) and Gupta (pl. XLII A) periods. Almost all the regular features of red ware of Kushan and Gupta periods were found besides important antiquities, including a terracotta sealing with an inscription in Gupta Brahmi characters reading *Sri Gajantasya* with a bull figurine on the top, terracotta pestles, beads, human and animal figurines, a piece of soapstone casket, iron ring, green glass bead, green and black glass bangles and copper fish-hook.

The two seasons of explorations in the region not only brought to light some very significant archaeological sites, but some of these sites were also identified with ancient settlements mentioned in the Pali literature in connection with Lord Buddha's life. These identifications have been based on the size and antiquity of sites, similarities in the ancient and present names and their geographical locations. Accordingly

Plate XLI



A



B

A, *Pipari : NBPW deposit;* B, *Orai: Kushan structures*

Plate XLII



A



B

A, *Orai : Gupta structures;* B, *Sankisa: brick structure*

Behil with ancient Vehalinga, Ama with Atuma, Nagar with Nagaraka nigama, Siswania with Simsapavana of Setavya, Mehdawal with Medalumpa, Ukada with Ukkattha, Saltauwa with Salavatika and towards further north-east the township of Nautanwa with ancient Nivartana *chaitya* from where Siddhartha returned Chhandaka and Kanthaka back to Kapilavastu and Kaudiram with Koliyagrama are the important city and township identified.

53. Exploration along the Alakananda Valley, District Chamoli

In continuation of the previous year's *(1995-96,* pp. 86-88) work, B.P. Badoni assisted by B.B.S. Rawat of the Uttar Pradesh State Archaeology Department (Pauri Unit), under the direction of Rakesh Tewari, conducted exploration along the Alakananda valley from Karnaprayag to Helang in District Chamoli. The sites are listed below:

Tehsil	*Site/Locality*	*Nature of remains*
Chamoli	Arthala	Red pottery
-do-	Bemaru	Ruins of medieval temple and sculptures of Mahishamardini Durga and Uma-Mahesa
-do-	Gadora	Medieval sculpture of *Vinadhara* Siva and a late medieval sculpture of Ganesa
-do-	Garhi	Huge sculpture of Kubera placed on a lonely hillock, locally known as Garhi and sherds of red ware
-do-	Hat	Medieval temples and *naula* with sculptures of Parvati, Vishnu, Ganesa and *chaturmukha-linga*
-do-	Koteshwar	Medieval temple-group and sculpture of Parvati, Ganesa, *Seshasayi* Vishnu
-do-	Maldhar	Two temples of medieval period along with the sculptures of Parvati, Ganesa, Uma-Mahesa and Mahishamardini Durga

Tehsil	Village/Sites	Nature of remains
Chamoli	Mandal	Group of medieval temples and sculptures
-do-	Masaun	Remains of ancient temple
-do-	Nandaprayag	Medieval sculpture of Surya
-do-	Raitoli	Medieval sculptures of Surya, Parvati, Ganesa and red ware sherds
Joshimath	Barosi	Medieval sculptures of Parvati and Ganesa
-do-	Pakhi	Sculptures of Durga, Vishnu, Ganesa and Brahmani
Karnaprayag	Girsa	A late medieval temple with sculptures of standing Vishnu and *Seshasayi* Vishnu
-do-	Langusu	Medieval sculptures of Chamunda and Ganesa

54. EXCAVATION AT SANKISA, DISTRICT FARRUKHABAD

In continuation of the previous season's work (*1995-96,* pp. 89-97), Excavation Branch II, New Delhi, of the Survey, under the direction of B.R. Mani, assisted by Vishnu Kant, Ajay Kumar Srivastava, L.S. Mamani, V.P. Verma, Y.S. Nayal, Vinod Kumar, R.S. Rana, Ajay Kumar, Virendra Pandey, T.Z. Dani, Suresh Choudhary, D.N. Yadav and Mohan Sharma resumed excavation at the site with a view to know the antiquity of the site besides the Asokan elephant capital. In all twelve quadrants were excavated fully or partly from which three hundred and twenty-five antiquities were recovered besides the usual ceramics found in the first season's excavation work, confirming the earlier results. From the upper levels in some of the trenches, Gupta red ware and terracotta figurines were also found in association with brick structures which suggest that this sacred

Plate XLIII



A



B

Sankisa: A,*Kushan structures;* B, *NBPW levels*

Plate XLIV



A



B

Sankisa: A, *structural-complex;* B, *stupa mound, excavated trenches*

area for the Buddhists witnessed continuous activities from NBP W period to Gupta period.

Remains of two parallel located elliptical structures of about 6 m length were noticed (pl. XLIIB) in the upper levels in Sq B6, Qds 3 and 4 and Sq B7 Qd 2 having triple brickbats lining of single course in each of them. It is difficult to interpret their functional purpose. In the levels below this were partly exposed structures belonging to Kushan period (pl. XLIII A). A deep pit sealed by NBPW levels and cut through the natural soil contained a complete pot of black-slipped ware (pl. XLIII B). Brick structures of Gupta, Kushan and Sunga periods were also noticed in Sq ZF-15, Qds 1 and 2; ZE-15, Qd 2; ZE-16 Qds 2 and 3. A plan of a room was exposed there towards the west of the site of Asokan elephant capital. It was noticed to be around 4 sq m with the section facing north showing walls of three successive phases (pl. XLIV A). It was found that bricks (53 cm to 54 cm x 24 cm x 6 cm) were used in the pre-Kushan age which were reused in the successive phases along with decorated bricks in the third phase. In the later phases an entrance was also provided towards the eastern side. This room may be a part of a monastery which seems to have existed from Maurya to Gupta period. Evidences of fallen brick structures and brick robbing were also noticed.

Four quadrants were excavated towards north-east of the so-called Stupa mound (pl. XLIV B). InQd 1 ofZD9andQd2 of ZC 8 the upper levels were found fully disturbed, perhaps due to filling up of the area in later times. In Qds 1 and 4 of ZC-8, brick debris of the thickness of 1.50 m was found from the surface downwards and the deposit of layer 2 below it was found disturbed, which might be because of excavations conducted by Sir A. Cunningham and others, as a coin of East India Company of 1853 was found from the deposit. A brick structure of two courses with only a few *in situ* bricks was found. The bricks (54 cm x 27 cm x 9 cm) were perhaps part of a structure of pre-Kushan period. A floor was also associated with it. Further levels below this belong to NBPW period mixed with PGW. It is quite evident that these trenches abutting the brick mound, supposed to be the main stupa, containing thick deposit of brick debris in the topmost layer, point to some important construction in the close vicinity which was damaged in due course of time.

As stated above, pottery of different periods found during excavations confirmed the results of the first season. Besides pottery, important antiquities from the site include terracotta objects such as sixteen human (pl. XLV), and twelve animal figurines, twenty-nine beads and pendants, ten pieces of bangles, forty-eight discs, fourteen wheels, forty-eight miscellaneous objects and six hopscotches. Also found were nine stone beads, five copper coins, forty-one metallic objects, thirty-two glass bangle pieces and beads, four stone objects, seven pieces of shell bangles and one stone human head. Four broken parts of stone sculptures and terracotta figurines were collected from Sarai Agahat, another site at a distance of about 2 km north-west of Sankisa. A large number of loose sculptures were noticed lying at five different places in the village and a huge *ekamukha Siva-linga* of post-Gupta period was also seen there.

55. Exploration in District Gonda

The Department of Ancient Indian History and Archaeology, University of Lucknow, Lucknow, under the direction of Devi Prasad Tewari, assisted by Durgesh Kumar

Plate XLV



A



B

Sankisa: A-B, *Gupta terracotta heads*

Srivastava, Brijesh Kumar Pandey and Ambarish Chandra Saxena completed the survey in the Rapti-Kuwano valley in Gonda and a newly formed District of Balrampur and discovered the following sites.

Amarahwa	Black-and-red ware, red ware (Kushan)
Azabnagar	Red ware (early medieval)
Bafawan	Black-slipped ware, black-and-red ware (Kushan and early medieval)
Bansedila	Black-slipped ware, black-and-red ware, red ware (Kushan)
Bhadawan	Red ware (early medieval)
Bhairampur	Grey ware, black-slipped ware, red ware (Kushan/ Gupta/early medieval)
Bhakasiniya	Red ware (early medieval)
Bisunpur	Red ware (early medieval)
ChakawaKulhi	Black-and-red ware and red ware (Kushan/ early medieval)
Charo	Black-slipped ware, red ware (Kushan/Gupta)
Chiti	Grey ware, black-and-red ware, red ware (Kushan/ Gupta)

Village/Site	Nature of remains
Devaria - Mubarakpur	Red ware (medieval)
Devaria - Vishwambharpur	Red ware, black-and-red ware (Kushan)
Dhanaulidihwa	Red ware with bright slip (Kushan)
Dhobaha	Red ware, decorated tiles (Kushan)
Ghorcharhi	Red ware, black-and-red ware (early medieval)
GumariBajar	Red ware, black-and-red ware (Kushan/Gupta)
Harbanspur	Black-slipped ware, black-and-red ware, red ware (Kushan and early medieval)
Harikishna	Red ware, black-and-red ware (Kushan)
Juadhan	Red ware, black-and-red ware (medieval)
Kalandarpur	Red ware (medieval)
Kandhabhari	Black-and-red ware, red ware (Kushan)
Katahiya	Red ware and black-and-red ware (early medieval)
Khakharebhari	Red ware (early medieval)
Koncha-Khas deeh (Konch-Kasimpur)	Black-slipped ware, red ware (early medieval)

Village/Site	*Nature on remains*
Lawada deeh	and pre Mughal) Black-slipped ware, red ware
Laxmanpur	(early medieval)
MahadevaMisra	Grey ware, black slipped ware, black-and-red ware and red ware (contemporary to NBPW)
Mai Parmeshvari Devi Sthan (Mehanavan)	Red ware, broken piece of terracotta (Kushan and Gupta)
Malangasthana (Jagadeva)	Grey ware, black-slipped ware, black-and-red ware, red ware, cord-impressed pottery, stone chips and cores of chert, agate (pre-NBPW, sixth century BC to Gupta period)
Malari Deeha	Black-slipped ware, black-and-red ware, red ware (early medieval)
Naubasta	Red ware (medieval)
PanahiyaDihwa	Grey ware, red ware (early medieval)
PeharBharia	Red ware, black-and-red ware (early medieval)
Ragai	Black-slipped ware, black-and-red ware, red ware (pre- Kushan)
Raja-ki-dyodhi (Mehanavan)	Red ware, ruins of fort (early medieval and medieval)
RampurMurare	Red ware, black-and-red ware (early medieval)
zed ware, red ware (Kushan	

Village/Site	*Nature of remains*
RampurSahana	Red ware (early medieval)
Rukhedeeh	Red ware (early medieval)
Sahabara	Red ware (early medieval)
Sekhui Kalan	Red ware (Kushan)
Shahapur-Itai	Black-slipped ware, red ware (Kushan)
Sirsia	Red ware (early medieval)
Sonar	Black-slipped ware, red ware (early medieval)
Survandeeha	Red ware (Kushan and Gupta)
Tendua Rachhaura	Red ware (Kushan and early medieval)
Tikauli	Grey ware, NBPW, black-slipped ware, red ware (sixth century to Gupta period)
Udaipur	Grey ware, black-slipped ware, black-and-red ware (pre-NBPW) red ware
Vishua Ganesh	Red ware (late medieval)

56. Exploration in District Lalitpur

In continuation of the previous year's (*1995-96,*pp. 104-105) work, AmbikaPrasad Singh of the Uttar Pradesh State Archaeology Department, Jhansi Unit, under the direction of Rakesh Tewari, undertook exploration in Birdha Development Block.

During the course of exploration, a number of ancient monuments, stone sculptures and other

archaeological remains datable from *circa* ninth to nineteenth century were noticed. A medieval temple, known as Ranachora Temple, originally with a flat roof over its sanctum, is noteworthy to which a dome was added later. An image of Vishnu mounted on *garuda* is found carved on the *lalatabimba.* A fourteen-armed Vishnu(Circa twelfth century) image is found installed in the *garbhagriha.*

Following is the list of sites with evidence of archaeological remains.

Village/Site	***Nature of remains***
Airawani	Medieval sculptures, Ram-Janaki Mandir *(circa* nineteenth century) and sari-stone
Andela	Medieval sculptures
Bachhalapur	Medieval sculptures
Bajarra	Ram-Raja Temple *(circa* eighteenth-nineteenth century)
Balabehat	Medieval sculptures, fort, step-well, temples *(circa* eighteenth century) and Jaina *sarvatobhadrika*
BamhoriBansha	Medieval sculptures, sari-stone
Bamhori Bansha	Red ware (medieval), Siva-*linga,* medieval sculptures and *Sapta-matrika* panel
Bangaria	Medieval sculptures and ruins of a Garhi
Betana	Medieval sculptures Medieval sculptures

Village/Stte	***Nature of remains***
Birari	Ruins of a Garhi
Birdha	Medieval sculptures, Ram-Raja Temple *(circa* eighteenth-nineteenth century)
Chandera	Remains of a medieval temple
Chandpur	Early medieval temples, sculptures, medieval temples, sculptures, *sahasra-linga, sarovara* and sari-stones
Chararau	Early medieval and medieval sculptures, *sati-stone*
Chhilla	Medieval sculptures Medieval temple and
Dhojari	sculptures
Dongra Kalan	Medieval sculptures, Jaina temple *(circa* nineteenth century) and dilapidated *chhatri*
Dudhai	Early medieval and medieval temples, sculptures, and *sati*-stones
Hanotiya	Medieval sculptures
Kevalari	*Siva-linga* and medieval sculptures
Khajuria	Jaina temple *(circa* seventeenth-eighteenth century), Siva Temple *(circa* eighteenth century), Mural i Manohara Temple *(circa* nineteenth century), ruins of a Garhi and *chhatri*

Village/Site	Nature of remains
Khitwans	Medieval sculptures
Kumarola	Medieval sculptures
Lidhora	Medieval sculptures and temples
Magarpur	*Siva-linga* and sari-stone
Manwar	Medieval sculptures and remains of temple
Neemkhera	Medieval sculptures and sari-stone
Padana	Medieval sculptures
Patasemara	Medieval sculptures and sari-stones
Pataua	Medieval sculptures
Pali	Medieval Siva (Nilakanthesvara) Temple, *chhatri* (*circa* nineteenth century)
PipariaPali	Medieval sculptures
Salaiya	Medieval sculptures
Singepur	Medieval sculptures and sari-stones
Thagari	Medieval sculptures

Village/Site	*Nature of remains*
Tile	Medieval sculptures
Umaria	Siva-/*linga*, Jaina temple (*circa* eighteenth century)
Uttamdhana	Remains of medieval temple and sculptures

57. EXCAVATION AT RAMASARE PURWA, DISTRICT LUCKNOW

The Department of Ancient Indian History and Archaeology, University of Lucknow, Lucknow, under the general direction of S.N. Misra, S.B. Singh, and D.P. Tewari, assisted by Anoop Kumar Singh, Durgesh Kumar Srivastava and post-graduate students of Archaeology group, undertook excavation at Ramasare Purwa situated on the south-east suburban of Lucknow city (26° 50'32"N; 81 ° 1 '2"E). The extensive mound covering an area of 2 sq km was found to be cut into four parts by rail and cart tracks. The eastern part of the mound being large, with a height of 3 m to 4 m above the surrounding plain.

Three Trenches RAP-1, RAP-2 and RAP-3 were sunk on the eastern part of the mound upto the natural soil in order to establish the cultural sequence of this site and also to ascertain the nature of habitation.

The excavation though limited in nature, revealed a succession of three periods. The earliest is the late Kushan period, followed by Gupta age and superimposed by the early medieval period. It seems that the first habitation at the site started on sand-dunes and continued in three successive periods with a sub-division in Period II. The site was occupied without any break.

The earliest settlers of Period I, built their huts possibly of perishable material like reed or leaves in the late Kushan age in the second-third century AD, as post-holes have been found on the floors. Period I is actually represented by 35 cm thick deposit, and was characterized by the Kushan red ware, with deep bowls and flaring sides and truncated base including other red wares and ceramics. The ceramics represent Kushan red ware with bright red slip, stamped designs showing sigmas, concentric circles, horizontal lines and triangles with dots. The red pottery, which are at times burnished, represent bowls, dishes, vases, along with a number of sprinklers, a few sherds of black ware in layer number five possibly of bowls and dishes, miniature vases in different shapes and water vessles. A complete specimen of a potter's stamp with criss-cross design and concentric circles was also picked up. Knobbed-lids and ink-pot type lids were profuse in number. Trench RAP-2 revealed two *bhattis* at a depth of 1.05 m, the largest one measuring 2.30 m in diameter in round shape, with a depth of 85 cm (pl. XLVI A). The smaller *bhatti,* circular in shape, 1.13 m in diameter is 45 cm in depth;

Plate XLVI



A



B

Ramasare Purwa: A, *bhatti;* B, *humped bull*

the finds here include complete Kushan red ware consisting of miniature vases and jars etc. along with lot of ashes and charcoal.

A few terracotta figurines are noteworthy, depicting a bull with a prominent hump (pl. XLVIB), shown majestically and animal head with lozenge-shaped eyes represented on a spout of a certain pot.

Period II comprised two sub-phases: the early Gupta period and the late Gupta period, characterized by the occurrence of Gupta terracottas and ceramics.

The sub-phase is represented by a number of mud-floors in Trenches RAP-1 and 2 and post-holes. The ceramic industries characteristic of the sub-period A and B are red ware, with red slip along with medium and coarse red ware. The shapes included storage-jars, vases, dishes, carinated *handis* and miniature vessels, button-knobbed lids, ink-pot lids and sprinklers etc. along with spouted-vessels. Black-slipped ware, sturdy and coarse red ware, along with some stamped-pots with floral designs were also found in this period.

A few specimens of terracotta figurines recovered from this level deserve special mention. Among these a delicate female bust with graceful appearance and taut breasts, wearing *ekavali* in her neck (early Gupta period); beautiful bust of a female figure having oval face, full cheek, lotus-shaped eyes, thick lips and fine eye-brows, ear ornament, well-combed hair arranged in tiers and tied in knot-like *juda* at the top; a broken bust of a female figure wearing *ekavali,* other features being similar; besides broken hind portion of an animal in terracotta with tail entwined are particularly noteworthy. From Trench RAP-2, a terracotta female head with curly hair, arranged in tiers was also found. It has an oval face, full cheek, lotus-shaped eyes and thick lips, typical of the Gupta style. A broken terracotta representing an animal head with long neck, and another showing the trunk of an elephant are other interesting finds of this period. Besides a broken beak-faced terracotta animal figurine, beads and a copper antimony rod, also found were a iron knife and a hook.

Period III represented by 25 cm thick deposit, was characterized by knife-edged bowls and ether early medieval wares, including glazed ware. Pottery is mostly wheel-turned and red in fabric depicting bowls, jars, vases, miniature vessels and other wares. Some thick and sturdy pottery consisting of storage-jars were also found. Spouted-vessels, button-knobbed lids were also discovered. A few perforated sherds, probably lids, are among the other finds. A floor constructed in rubbles found in Trench RAP-2, belongs to the early medieval period. It seems that the brickbats were rammed for preparing the floor.

A few broken terracottas are noteworthy in this period, representing a broken torso probably of a female figure with slightly raised left leg and stretched right leg. A head probably of a monkey with open mouth and small ears, a terracotta figurine with beaked-face, a broken foot of human being and a bust of a male figure, with right hand placed on the chest are other interesting specimens of this period. Another noteworthy find consists of a copper coin, bearing a legend in Arabic *Zarabo fee misra,* dated Hizari 277 (coin minted in Egypt in *circa* AD 899). The reverse is obliterated. This is probably found on the upper surface of the mound, confirming our dates of the early medieval period to the uppermost strata of this site.

58. Exploration in District Mirzapur

Prahlad Kumar Singh and Girish Chandra Singh of the State Archaeology Department, Government of Uttar Pradesh, Lucknow, under the direction of

Rakesh Tewari, conducted exploration in fifty-one villages in Block Halia of the Lalganj sub-division.

The most important finds of this exploration were the two small temples of Pratihara period belonging to *circa* ninth century AD. One of them is situated at Bardiha Khurd village while the other one is in Batoan village of Halia block.

Both the temples consist of a *triratha garbhagriha* preceded by an *antarala.* The elevation displays *jagati,* elevated by three *bhittis, vedibandha* decorated with *khura, kumbha, kalasa, antarapatra* and *kapota* moulding; *jangha* - bearing niches showing Ganesa, Surya and Parvati, and *sikhara,* divided by *bhumi-amalakas. Purvabhimukha* entrance-doors comprise three *dvara-sakhas,* decorated with *patra-sakha* and *naga* motifs. The tails of *naga* shown on either side are held in the hands of *Garuda* depicted on *lalatabimba.*

A number of temple remains, sculptures and architectural members have been found scattered in the area.

Besides, numerous sites yielded red ware, black ware, black-and-red ware and grey wares, most of which belong to the medieval period. The sites are as under.

Tehsil	*Village/Site*	*Nature of remains*
Halia	Bardiha khurd	Medieval temple remains and Brahmanical sculptures, inscription and red ware
-do-	Batoan	Medieval temple remains and Brahmanical sculptures, red ware
-do-	**Deori**	Red ware,black ware, black-and-red ware, medieval temple remains and Brahmanical sculptures
-do-	**Matkhana**	Red ware, black ware (medieval)
Lalganj	Amaha	Medieval red ware and Brahmanical sculptures
-do-	**Amriti**	Medieval red ware
-do-	**Atri**	Medieval red ware

Tehsil	Village/Site	Name of remains
Lalganj	AtriDakkin	Red ware and microliths
--do--	Baghai	Medieval red ware
do--	Bami	Red ware, grey ware, medieval temple remains
do--	BamniGaharwar	Medieval red ware and temple remains
-do-	Banawan	Red ware, black-and-red ware, microliths
	Banwari	Medieval red ware
-do-	Barhar	Medieval red ware
	Baripur	Medieval red ware
	Baruan	Medieval red ware
	Basuhara	Microliths, red ware, red-slipped ware, black-slipped ware and black-and-red ware
	Bhatwari	Red ware, black-slipped ware, black-and-red ware and grey ware
	Bidavr	Red ware, red-slipped ware, black-slipped ware, early medieval temple remains and sculptures
	Bilah	Medieval red ware and black ware
	BilahChak	Medieval red ware

Tehsil	*VitlagelSite*	*Nature of remains*
Lalganj	Bilahi	Medieval red ware
-do-	Bindli	Red ware, black ware and black-and-red ware
-do-	BistraPande	Medieval Brahmanical sculptures
-do-	BistraRaja	Medieval red ware
-do-	Chapla	Medieval red ware
-do-	CharkiGuriwan	Medieval red ware
-do-	Chitha	Microliths and medieval red ware
-do-	Chhitang	Medieval red ware
-do-	ChireiramJailal	Medieval temple remains
-do-	ChigriramKota	Medieval red ware
-do-	Dadari Raja	Red ware, black-and-red ware
-do-	Dandi	Medieval red ware
-do-	Dhasra	Red ware, medieval Brahmanical sculptures
-do-	DhasraRaja	Red ware, black-and-red ware
-do-	Dhendhi	Medieval red ware and red-slipped ware

Tehsil	*Village/Site*	*Nature of remains*
Lalganj -	Dhopapur	Red ware and black-and-red ware
do--	Dibhor	Late medieval temple and medieval red ware
do-	Dohar	NBPW, red ware, black-slipped ware, black-and-red ware, grey ware, microliths; early medieval temple remains and sculptures
-do-	DubarKalan	Medieval red ware
-do-	Dulahpur	Medieval red ware
-do-	Gangahra Kalan	Medieval red ware
-do-	Ganjaria	Medieval red ware and red-slipped ware
-do-	Garba	Medieval red ware and black ware
-do-	Ghurman	Medieval red ware
-do-	Gobindiya	Red ware, red-slipped ware, black-slipped ware and black-and-red ware
-do-	GondarKhurd	Medieval red ware
-do-	Hardiha	Medieval red ware
-do-	Harra	Red ware and black-slipped ware

Tehsil	*Village/Site*	*Nature of remains*
Lalganj	Hathera	Red ware, black-and-red ware, red-slipped ware, microliths, megalithic burials and black-slipped ware
-do-	Jagdishpur	Medieval red ware
-do-	JaikarKalan	Medieval red ware
-do-	JaikarKhurd	Red and black wares
-do-	Kanohi Raja	Medieval red ware
-do-	Kanohi Muafi No. 1	Red ware
-do-	Kanohi Muafi No. 2	Medieval red ware
-do-	Katai	Grey ware, red ware and black-slipped ware
-do-	Kathwar	Medieval temple remains
-do-	Kewaijhar	Medieval red ware
-do-	Khaira Kalan	Medieval red ware and black ware
-do-	Khajuri	Medieval red ware and grey ware
-do-	Khamaria	Medieval red ware
-do-	Khera Bhabutata Prasad	Red and black wares

Tehsil	*Village/Site*	*Nature of remains*
Lalganj	KhomarMaina	Medieval red ware
-do-	Khurda	Medieval red ware
-do-	Kolha	Medieval red ware
-do-	Kotar	Early medieval temple remains and sculptures, megalithic burials, red ware, black-and-red ware and red-slipped ware
-do-	KothiKhurd	Medieval red ware
-do-	KulkamKalan	Megaliths
-do-	Kuluha	Megaliths
-do-	Lahangpur	Medieval red ware
-do-	Laina	Red ware, black-slipped ware and red-slipped ware
-do-	Lalganj	Medieval red ware
-do-	Lian	Red ware, black-slipped ware, red-slipped ware and black-and-red ware
-do-	Magardaha	Red ware
-do-	Mahurgarh	Red ware, red-slipped ware and black-slipped ware

Tehsil	Village/Site	Nature of remains
Lalganj -	MainaGosain	Red ware, medieval temple remains
do-	Majhigawan	Microliths, medieval red ware and black-and-red ware
-do-	Majhiyar	Upper Palaeolithic blades, microliths, grey ware, red ware, black-slipped ware, punch-marked coins, early medieval temple remains and sculptures
-do-	Manikpur	Medieval red ware
-do-	Meouri	Medieval red ware
-do-	Mundwa Nawada	Red ware, black-and-red ware
-do-	Nadgahana	Medieval red ware
-do-	Naraina	Red ware, grey ware, black-and-red ware
-do-	Naugawan	Microliths, red ware, black-slipped ware, black-and-red ware and red-slipped ware
-do-	Newadhia	Red ware and black-and-red ware
-do-	Panjra	Red ware and black-and-red ware
-do-	Parsia Gokul	Red ware, black ware and medieval temple remains
-do-	Patar Kalan	Medieval red ware and black ware

Tehsil	Village/Site	Nature of remains
Lalganj	PatarKhurd	Medieval red ware
-do-	Pathraha	Microliths, red ware, red-slipped ware, black- and-red ware
-do-	Patloki	Medieval red ware
-do-	Phuliyari	Red ware and black-and-red ware
-do-	Pipri	Medieval red ware and black ware
-do-	Pokhraur	Medieval red ware and black ware
-do-	PuraKashinath	Medieval red ware, grey ware and black-and- red ware
-do-	PuraLokai	Medieval red ware
-do-	Purwa Ausan Singh	Medieval red ware, red-slipped ware
-do-	Rajai	Medieval red ware
-do-	Rajapur	Medieval red ware
-do-	Ramibari	Medieval Brahmanical sculptures
-do-	Rehi	Red ware, black-and-red ware and black ware

Tehsil	*Village/Site*	*Nature of remains*
Lalganj	Sagara	Red ware, black-slipped ware
-do--	Sigata	Microliths, red ware, red-slipped ware
--do-	Silhata	Red ware, red-slipped ware
-do--	SonthiaKala	Microliths, red ware and black-slipped ware
-do--	Subahukala	Microliths, red ware, black-slipped ware
-do-	Subaon Raja	Red ware, black-and-red ware, black ware
-do-	TinduaKalan	Black ware and red ware
-do-	Tenduani	Medieval red ware
-do-	Tharparsia	Medieval red ware
-do-	Thontha	Microliths, red ware, black-slipped ware
-do-	Tokwa	Upper Palaeolithic blades, bone tools, red ware, black-and-red ware and grey ware
-do-	Umaria	Medieval red ware and red slipped ware
-do-	Uska	Medieval red ware
-do-	Usri Pande	Medieval red ware

59. Exploration in District Pithoragarh

Under the village-to-village survey scheme, an archaeological exploration was taken up by Suresh Kumar Dubey under the general guidance of Hem Raj of Regional Archaeological office, Almora, Government of Uttar Pradesh. Out of one hundred and twenty villages explored, only twenty-one have brought to light stone images of Uma-Mahesa, Surya, Brahma, Vishnu, Chamunda, Ganesa and other gods and godesses which were found lying in the villages of Rai Agar, Pantgaon, Dantoli, Chimtoli and Bhanda etc. Votive pillars, locally known as *vira-stambhas* were found located at Lakshmi-Pathak, Pankhu, Lezam, Baugad, Hunera and Chama villages. Ruins of ancient forts have also been found at Koteshewar. Covered water springs locally known as *naulas* were explored in the villages of Nanpapo, Chhalodi, Deupa, Dungari and Banku. A copper plate of Saka 1340 (AD 1418) belonging to king Gyan Chand in Devanagari script was found lying in Tyadigaon village.

60. Exploration in District Raibareli

In the course of village-to-village survey, Rajiv Kumar Trivedi of the State Archaeology Department, Government of Uttar Pradesh, Lucknow, explored seventeen villages in Shivgarh, twenty villages in Maharajganj and eighteen villages in Harchandpur blocks. The exploration revealed mostly late medieval octagonal temple and sculptures besides mound ranging from late Gupta to early medieval period.

The explored sites of archaeological importance are as under.

Tehsil/Block	*Village/Site*	*Nature of remains*
Harchandpur	Adhausa	Temple (eighteenth century)
-do-	Adover	Black ware, red ware, red-slipped ware, temple (eighteenth century) and medieval Brahmanical sculptures)
-do-	Aguri	Medieval Brahmanical sculptures
-do-	BhawaniNagar	Red ware and temple (eighteenth century)
-do-	Dulampur	Red ware and temple (eighteenth century)
-do-	Gangaganj	Red ware and red-slipped ware
-do-	Harchandpur	Temple (eighteenth century)

Tehsil/Block	VillagelSite	Nature of remains
Harchandpur	Johwa Hissar	Medieval Brahmanical sculptures, red ware, black-and-red ware and red-slipped ware
-do-	Johwa Sharki	Temple (eighteenth century) and medieval Brahmanical sculptures
-do-	Kandaura	Temple (eighteenth century)
-do-	Kasokas	Temple (eighteenth century), and medieval Brahmanical sculptures
-do-	Kathwara	Temple (eighteenth century) Temple
-do-	LalupurKhas	(eighteenth century)
-do-		Pure-Pandit-Ka Purwa Temple (eighteenth century)
-do-	Samsherganj	Temple (eighteenth century)
-do-	Sarai Umar	Temple (eighteenth century)
-do-	Shara	Temple (eighteenth century)
-do-	Sukua khesa	Temple (eighteenth century)
Maharajganj	Atra	Temple (eighteenth century)
–do-	Atrehta	Temple (eighteenth century)
--do--	Barahuwan	Temple (eighteenth century)

Tehsil/Block	*Village/Site*	*Nature of remains*
Maharajganj -do—	Bhaiyapur	Temple (eighteenth century)
-do-	Chandapur	Red ware, red-slipped ware
-do-	Hardoi	Red ware, red-slipped ware
-do-	Hasanpur	Temple (eighteenth century)
-do-	Janai	Temple (eighteenth century), medieval Brahmanical sculptures, red ware, red-slipped ware, black ware, etc.
-do-	Kair	Temple (eighteenth century)
-do-	Maharajganj	Temple(eighteenth century)
-do-	Maugarvi	Temple (eighteenth century)
-do-	Mon	Temple (eighteenth century)
-do-	Oee	Temple (eighteenth century)
-do-	Pakhanpur	Red ware
-do-	Parakala	Temple (eighteenth century)
-do-	Parakhurd	Temple (eighteenth century)
-do-	Purasi	Temple (eighteenth century)

Maharajganj	Radhaupur	Temple (eighteenth century)
-do—	RajapurParakhurd	Temple(eighteenth century)
-do-	Salethu	Temple (eighteenth century)
Shivgarh	Achhai	Red-slipped ware and red ware
-do-	Bainti	Temple (eighteenth century)
-do-	Bankagarh	Temple (eighteenth century)
-do-	Bidaru	Temple (eighteenth century)
-do-	Bhawanigarh	Temple (eighteenth century)
-do-	Dahigawan	Temple (eighteenth century)
-do-	Dehil	Red ware, black-and-red ware
-do-	Guda	Temple (eighteenth century) and medieval Brahmanical sculptures
-do-	Gumanwan	Temple (eighteenth century), black ware and red ware
-do-	Kasna	Red ware and red-slipped ware
-do-	Khajron	Remains of temple (eighteenth century)

Tehsil/Block	Village/Site	Nature of remains
Shivgarh	Kotawa	Red ware, medieval Brahmanical sculptures and temple (eighteenth century)
-do-	Kumhranwan	Black ware, red ware and red-slipped ware
-do-	Osah	Red ware, red-slipped ware, medieval Brahmanical sculptures and temple (eighteenth century)
-do-	Pindauli	Temple (eighteenth century)
-do-	Pipri	Temple (eighteenth century)
-do-	Rajapur	Temple (eighteenth century)

61. EXCAVATION AT RAJA NALA-KA-TILA, DISTRICT SONBHADRA

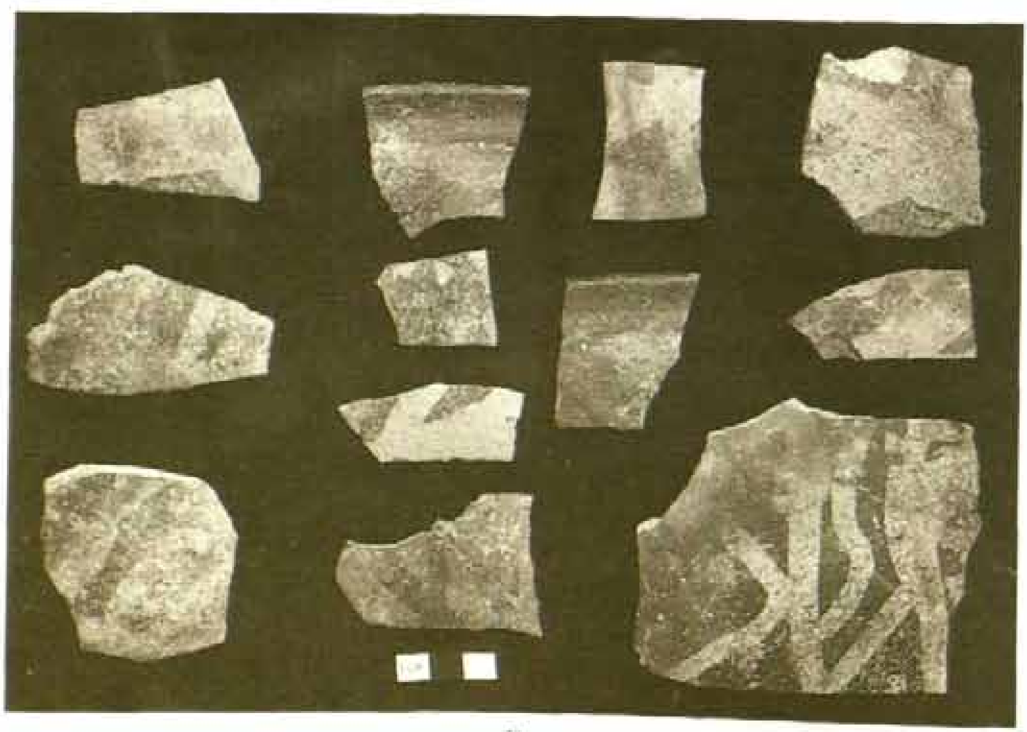
Rakesh Tewari, Rakesh Kumar Srivastava, K.K. Singh, Balaram Krishna, Ram Gopal Misra and Monmohan Dimri of the State Archaeology Department, Government of Uttar Pradesh, Lucknow, resumed excavations at the site to ascertain the settlement pattern of the pre-NBPW cultures as also to confirm the context of iron.

Three locations were selected for excavations (i) the eastern end of the site near village Talla, (ii) comparatively flat area between the above, which collectively yielded pre-iron, early iron, NBPW and Gupta-post Gupta cultural deposits. Period I pre-iron, deposit of about 0.80-1.00 m consists of layers (7), (8) and (9). The main ceramic industries include red ware, black-and-red ware, black-slipped ware, grey ware and black ware. Slipped and rusticated varieties are present in considerable number. The corded ware was rarely represented. A few hand-made sherds were also found. Important shapes comprised pedestalled, perforated, footed, lipped and other types of bowls and vases. Dishes of black-and-red ware, black-slipped ware and red ware were confined to the upper levels of layer (7). A few sherds of red ware (pl. XLVII A), black-and-red ware and black-slipped ware bear painted motifs in ochre, black and creamish white pigments (pl. XLVII B). An example of a small vase, decorated below the neck, with yellowish pigment probably marked by finger tips (pl. XLVIII A) is notable. This tradition may still be observed in the ritual of *kalasa sthapana* during the socio-religious functions. Besides painting, applied rope pattern and incised geometrical decorations were also represented (pl. XLVIII B).

Plate XLVII



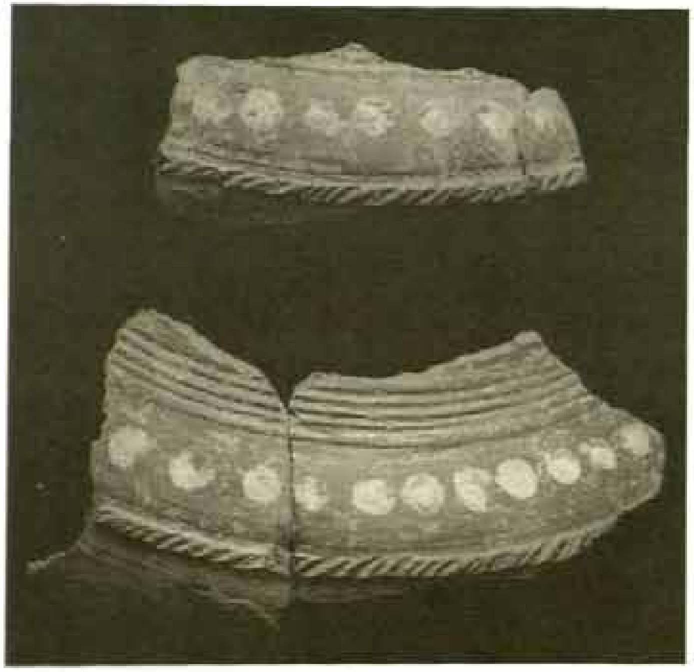
A



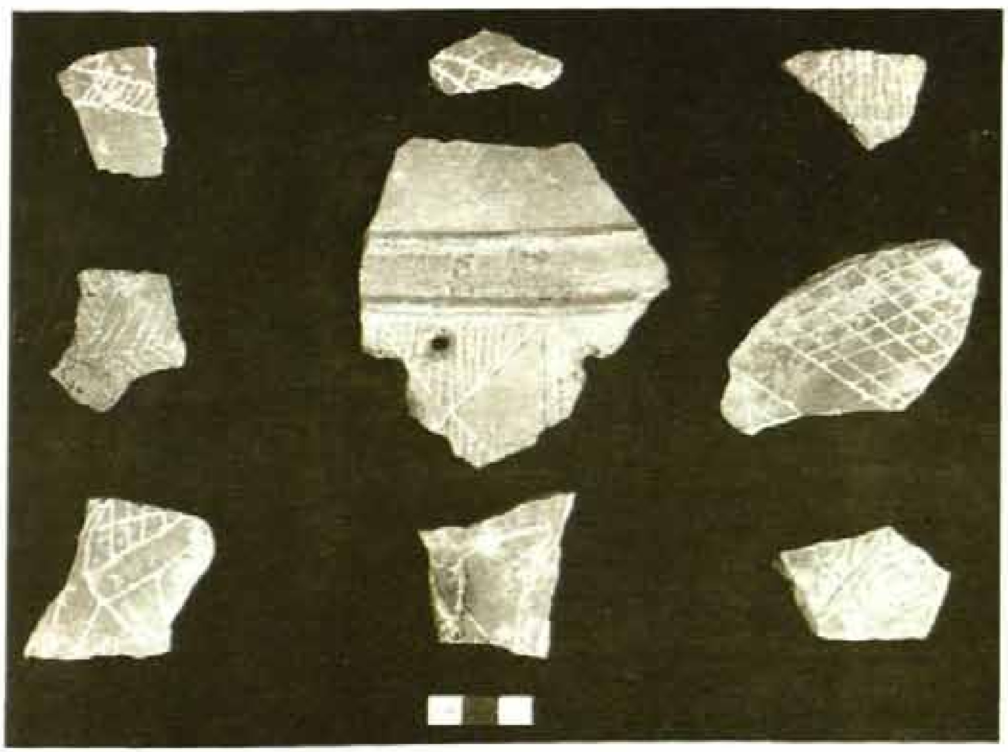
B

Raja Nala-ka-Tila : A, painted red ware; B, painted black-and-red ware, Period I

Plate XLVIII



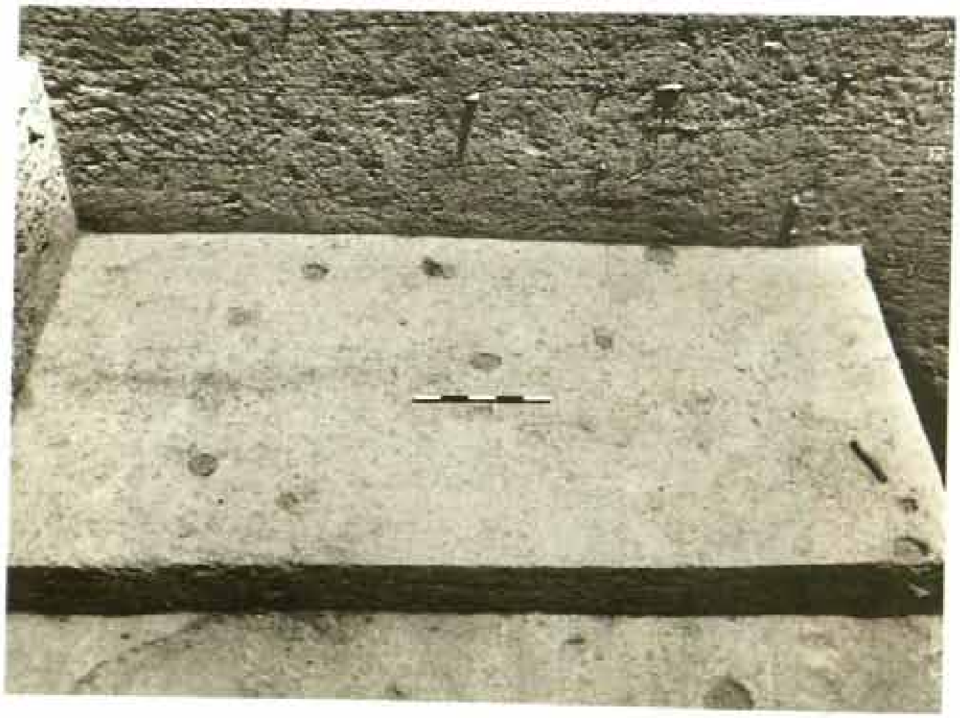
A



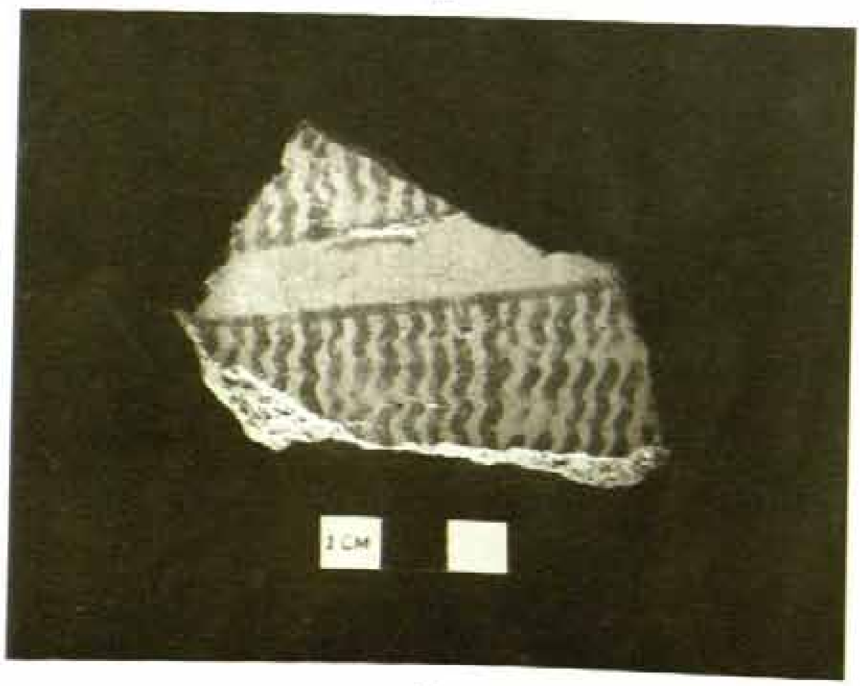
B

Raja Nala-ka-Tila : A, *fragments of black-and-red ware vase bearing finger-tip designs;* B, *decorated sherds of black-and-red ware and red ware, Period I*

Plate XLIX



A



B

Raja Nala-ka-Tila: A, *mud-floor with post-holes, Period I;* B, *red ware painted with black pigments, Period II*

A few post-holes (pl. XLIX A) forming oval or roughly circular huts represent the settlement pattern, particularly marked by floors rammed with tiny potsherds and local redish earth. Burnt-clay lumps bearing reed impressions and bone implements were found on these floors. A few terracotta and stone beads, chips and bladelets, stone pestles and balls comprise other notable finds.

Layer (8), about 15-20 cm thick, comprising fine sand with rolled pottery seems to be representing a flood deposit, on the basis of which Period I may further be divided into IA and IB. The occurrence of an iron artefact from mid-level of layer (7) also supports this sub-division.

About 1.50 m thick deposit of Period II was marked by the appearance of iron artefacts in considerable number from lower to upper levels. Black-and-red ware sherds with painted motifs (pl. XLIX B) in ochre or black pigment were the representative types of this period. The number of dishes and proportion of black-slipped ware increased. Besides conical vessels in red ware, also interesting were the baked and unbaked cylindrical mud bases of *kothila* which probably were utilized for storing grains.

Structural remains include four successive floors rammed with tiny potsherds and mud along with primary and secondary post-holes, forming circular pattern. Burnt patches, pit hearths, stone anvils were also found on the floors. The occurrence of burnt clay nodules with reed, bamboo and straw marks indicated that the walls and screens of the huts were of wattle-and-daub.

Bones, including charred and those with cut-marks, increased in greater proportion in Period II:. Carbonized Archaeobotanical remains were collected for further studies by K.S. Saraswat of the Birbal Sahni Institute of Palaeobotany, Lucknow. A few copper implements, polished stone celts, antelar, stone pestles, terracotta and stone beads, terracotta bangles were among the other antiquities. Bone arrow-heads and points were also present in considerable number. A few stone chips and broken bladelets were also collected from the excavation.

Period III is characterized by the appearance of NBPW with associated ceramics *viz.,* red ware, black-slipped ware, black-and-red ware, grey ware, red and black ware. Although the number of NBPW sherds was limited, there was a good proportion of deluxe variety. A few cord-impressed sherds were also reported. Rustication, burnishing and other traits, except paintings also continued.

No brick structure and bricks were evident but the post-holes and floors retained the earlier pattern.

Period IV was represented by a red ware ceramic industry datable to the Gupta and post-Gupta periods.

62. EXCAVATION AT SRAVASTI (MAHETH), DISTRICT SRAVASTI

L.C. Singh assisted by B. Nath, R.K. Sinha, D.K. Singh, N.K. Sinha, P.C. Das, S.P.Gupta and O.P. Pandey of the Excavation Branch III, Patna of the Survey with the collaboration of the Archaeological Research Institute of Kansai University, Japan, under Y. Abosi, assisted by F. Yoneda and others of the Japanese team resumed excavation at Maheth (Area E) in eight quadrants upto a depth of Period III.

The main objective of this excavation was to trace extension of exposed structures and to ascertain the complete habitational pattern of Area 'E'.

Area 'E' is located just north-east of the excavation camp, where an area of 10 x 10 m was taken up for digging during the year 1995-96. An evidence of massive building-complex belonging to Period III, i.e., from early Christian era to the fourth century AD, was exposed. But due to limited area of digging operation, entire plan of the building-complex could not be exposed (fig. 13).

The exposed structures are of two different house-complex (pl. L A), separated by a street. The width of this street varies from 2 to 2.5 m. The street is roughly in north-south direction. The remains of two separate house-complex have also been traced on either side of the street.

In one house-complex on the eastern side of the street, only one complete room was exposed which measures 1.60 x 1.75 m. This room is in the northwestern corner of the house-complex. At least, the remains of three more rooms of this house-complex were also partly exposed. Only corners of these rooms could be traced, hence the exact size of these rooms could not be measured. In the centre of this house-complex, a very big broken earthen pot was found which was kept on a slightly higher platform. Perhaps this place was used as bathroom, because a brick-paved drain was also noticed (pl. L B).

The area between the rooms are paved with brickbats. Intact bricks were also found scattered at several places. The opening of two rooms were in a passage (pl. LI A). The thickness of most of the wall was about 40 cm.

Two phases of constructional (pl. LI B) activities were identified in this house-complex. In the earlier phase, mostly Kushan bricks of the following sizes were used. The sizes are 34 cm *x* 23.5 cm x 4.5 cm; 32 cm x 24 cm x 5 cm; 33.5 cm x 24 cm x 5 cm and 34 cm x 24 cm x 5.5 cm. But in phase II, only brickbats were used. The structures of phase II were directly raised over the structures of earlier phase (fig. 14).

The remains of second house-complex was exposed in the western side of the street in which one complete room of 2.60 m x 2.10 m size was found. The remains of two other rooms were partly exposed.

The ceramic industry was represented mainly by red ware. A few sherds of black ware were also found. The red ware pottery is wheel-made but for the big pot-like basin and storage-jar. Pottery was made out of well levigated clay with medium to fine fabric. The common shapes are bowls of different sizes often having corrugation on outer body and sometime from inner side also with slightly incurved rim. The other shapes are shallow dishes, *lota* with saggar base, *surahi,* spouted-vessel, sprinkler, vases, *handi* and lids of different variety.

Among the six hundred and sixty-four antiquities recovered during this season's excavation, most noteworthy are those in terracotta, comprising human figurines, animal figurines, and beads. Besides beads of semi-precious stones, antimony rods, nails, knives and razors in metal, eleven corroded copper coins were also recovered from the excavation. A few of them were identified as local Ayodhya coins. Some seals and sealings bearing script in Kushan Brahmi characters were also recoverd.

Fig 13

PLAN OF MAHET 'E' AREA
SRAVASTI (UTTAR PRADESH)
1996-97

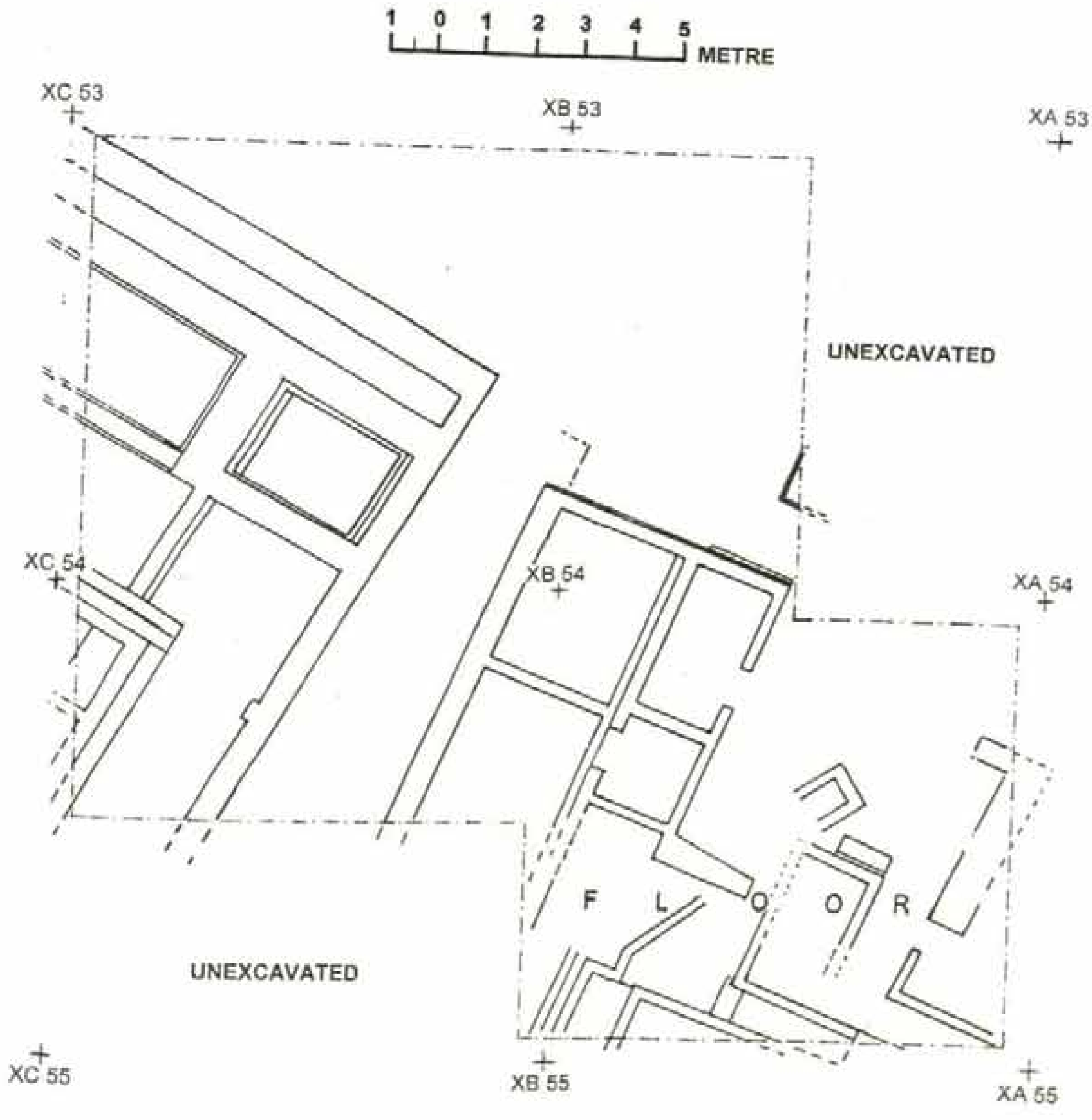
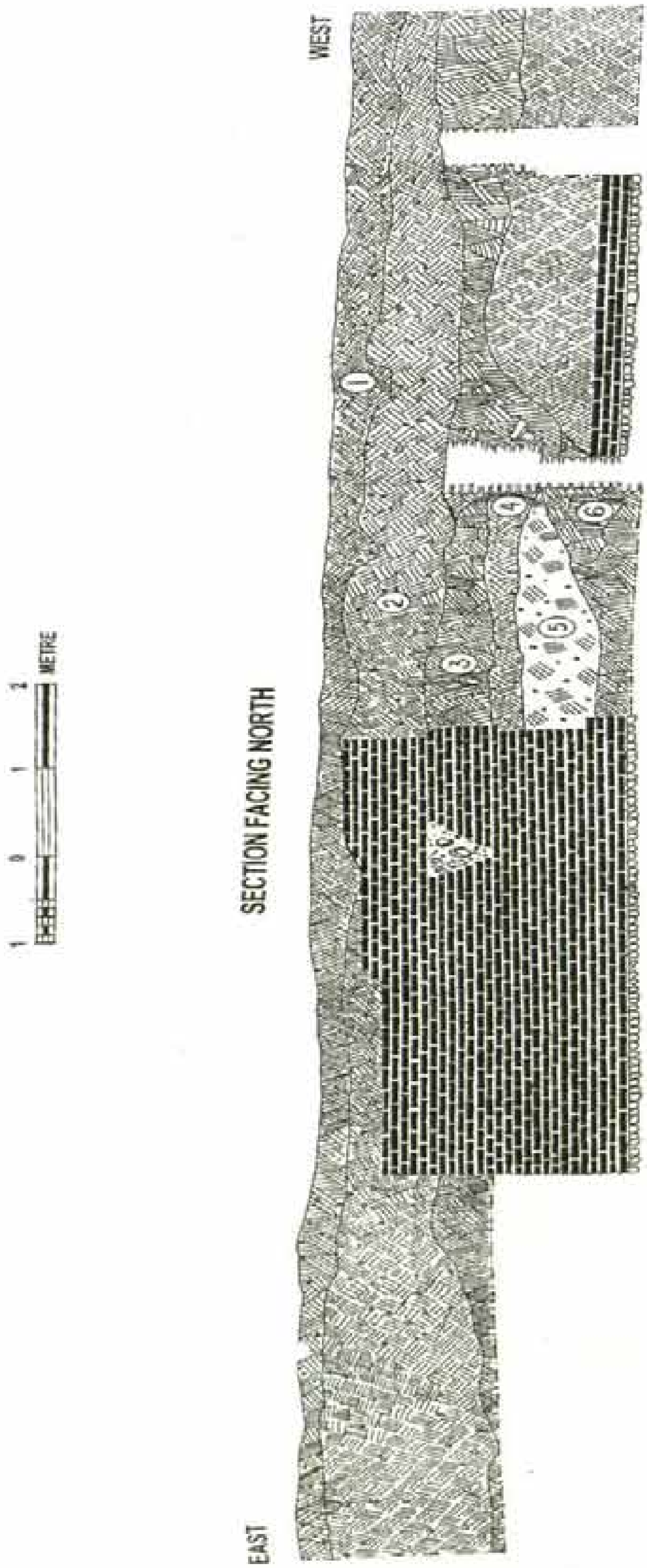


Fig 14



SRAVASTI 'E' AREA, MAHET 1996-97
TRENCH No. XC 53QDT. 3-4XB53QDT.3-4

Plate L



A



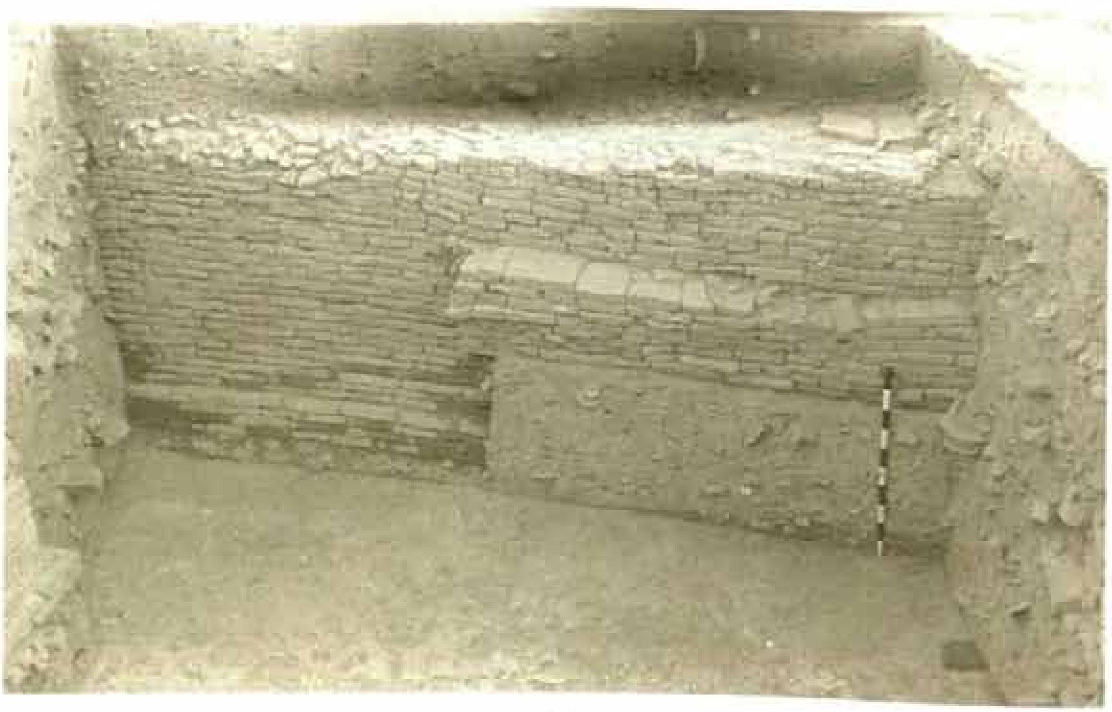
B

Sravasti: A, portion of house-complex; B, bathrooms and drain

Plate LI



A



B

Sravasti: A, *passage between rooms;* B, *wall showing different phases of construction*

63. EXPLORATION IN DISTRICT SULTANPUR

Indu Prakash of the Lucknow Circle of the Survey, noticed the following antiquarian remains in Gauriganj tehsil, during the village-to-village survey

Village/Site	***Nature of remains.***
Apohia	Mound yielding early historical and medieval pottery; stone sculptures of Vishnu, Hanuman and Mahesvara of medieval period
Bhatgawan	Mound yielding black-slipped ware, NBPW and a brick-built tank of nineteenth century
Jamon	Mound yielding early historical pottery and structural remains of late medieval period
Katari	Mound yielding medieval wares
Rajgarh	Mound yielding early historical pottery and stone sculptures ranging in date from Gupta to medieval period
Ramjhahpur	*Samadhis* of local Zamindar and Ghazi Mian-Ki-Mazar of nineteenth century
Richaura	Mound yielding medieval wares
RohriBuzurg	Mound yielding red ware pottery of medieval period

WEST BENGAL

64. EXCAVATION AT PAKHANNA, DISTRICT BANKURA

The Department of Archaeology, Calcutta University, Calcutta, under the direction of Chitrareka Gupta, assisted by A.C. Pal, M. Mitra, A.Dutta, T.Gantait and T.Sen carried out excavation at Pakhanna (23º24’45”N; 87º22’40”E)

Primary objective of this year's excavation was to ascertain the cultural sequence of the site. Pakhanna

is identified with ancient Pushkarana, the capital of king Chandravarman, the king of south Bengal who was defeated by Samudra Gupta as per the Allahabad Pillar inscription and also referred to in the Susunia Rock inscription. The excavation aimed at the identification of Pakhanna with Pushkarana and the gradual development of the area from the Chalcolithic village culture to the sophisticated urban historical period.

The village Pakhanna is situated on the south bank of the River Damodar where the ancient mound has been largely disturbed by flood and human habitation.

With a view to impart training to the post-graduate students in Archaeology only two horizontal trenches of 6 x 6 m were taken up in two areas, locally called Bhairav danga and Gader danga. The average height of Bhairav danga mound from the nearby paddy field is 4.04 m and that of Gader danga is 3.96 m from the river bed.

Bhairav danga indicated the evidence of Chalcolithic settlement. The trench at this mound, yielded painted and plain black-and-red ware, black on red ware (pl. LII A), painted and plain black ware, painted cream and brown ware, black ware with incised design, and perforated wares. Shapes in black-and-red ware include bowls, vases, channel-spouted vessels and *handis.* Tools and other objects in bone were found along with Chaleolithic ceramics. One copper ring was traced at a depth of 1.20 m. Upper part of the occupational deposit is highly disturbed. Stratified Chalcolithic deposit started occurring below 0.94 m. The natural soil was reached at a depth of 2.15 m.

Occupational levels were indicated by floors of successive phases. A mud-floor rammed with brickbats was found at a depth of 90 cm, having a thickness of 4 cm. The second mud-floor was exposed at a depth of 1.37 m. The associated finds of ceramics and bone tools indicated that the phase being Chalcolithic. One circular mud-floor (1.50m) was found in the central portion of the southwestern quadrant. This, in all probability, was a pit-dwelling. The pit started from 1.55m below surface and continued down to a depth of 1.12 m. The pit-wall showed traces of plastering by mud and cow-dung. The floor had yielded potsherds, bones, charcoal and ashes. Another circular floor was exposed in the western section. The floor (1.45 m) had cut the virgin soil which yielded Chalcolithic pottery. If both were pit-dwellings they neither belonged to the same level nor showed exact similarity in measurements. Further excavation at the site might aim at solving the problem.

Though the mound Gader danga is only about a quarter kilometer away from Bhairav danga, it has not yielded any evidence of settlement during the Chalcolithic period. This is a clear indication of extension and shifting of settlement area towards the east of Bhairav danga. The reasons of this shifting are yet to be determined. Settlements were developed at Gader danga area from the historic period. There are several mounds in this area, separated by tanks and village paths. Gader danga is one of these mounds.

Explorations at the area revealed Mauryan footed saddle quern, stamped animal figurine (pl. LII B), Sunga terracottas, punch-marked and cast coins. But the excavation did not yield antiquities of any precise date. On the basis of ceramics found from excavation it appears that the area remained in occupation from about 400 BC to the medieval period. Black polished wares, red polished wares, stamped and incised potsherds, moulded-potsherds were among the important ceramic types. One structure

Plate LII



A



B



C

Pakhanna : A, *sherds of black on red ware from Bhairav danga;* B, *stamped terracotta figurine;* C, *ring-well in cliff section of river Damodar*

of brick with mortar of *surkhi* and lime-plaster could be assignable to the medieval period. No structure of earlier phases could be found. Virgin soil was reached at Gader danga at a depth of 2.75 m.

The exploration was conducted on behalf of the Department of Archaeology, Calcutta University, Calcutta, by Asok Dutta to study the ring-wells (pl. LIIC) of the area. The study revealed fifty-six ring-wells, out of which thirty-five were examined. These were already partly exposed in the cliff section of the river. There were two classes of ring-wells *viz.,* the larger and the smaller. The diameter of ring-wells varied between 64 cm and 90 cm, while the average length of the rings was 9 cm. Thickness of each ring varied from 1.5 to 0.2 cm, but for one example which has a length of 24 cm. From the study of the contents of the ring-wells it appears that the larger ones were used as wells while the smaller ones were used as soak-pits. The larger ring-wells yielded silty clay material without any external particles, while the smaller ones have yielded deep dark brown earth with refuge material like potsherds, animal bones, brickbats, terracotta objects, etc. The presence of such huge number of ring-wells would throw light on the density of population of early historic Pakhanna and on the nature and character of civil life thereof.

65. EXPLORATION IN DISTRICT MIDNAPORE

In continuation of the previous year's work (*1995-96,* pp. 115-116), S. Maiti of the Culcutta Circle of the Survey, discovered the following sites of archaeological importance.

Police Station	Village	Nature of remains
Contai	Brahmansasan	Two Vishnu temples, one Sitala temple and one *atchala* brick-built Siva temple of nineteenth century
-do-	Chandibheti	Foundation of a mosque of sixteenth-seventeenth century; a flat-roofed brick built temple, square on plan, of eighteenth century and dilapidated ancestral house of freedom fighter Deshapran B.N. Sasmal of eighteenth century
-do-	Gopinathpur	Mazar of Hazrat Sayyad Sha Khaki of *circa* seventeenth century
-do-	Mukundapur	Hat-roofed brick built Durga Temple of eighteenth century
-do-	Satikeswar	Brick built *charchala* Siva Temple of eighteenth century

II. EPIGRAPHY

SANSKRITIC AND DRAVIDIC INSCRIPTIONS'

ANDHRA PRADESH

1. KAKATIYA INSCRIPTION, KANDUKUR, DISTRICT PRAKASAM

This inscription in Telugu language and characters, dated in Saka 1239 (AD 1317) belongs to the reign of Kakatiya Pratapa-Rudradeva. It records a gift of 1000 *kuntas* of land situated in Kandukuru as *vritti* to god Lakshmi-Narayana-Perumadlu by the oil-mongers of Bandaruvada and the people of Kandukuru for the merit of the king.

MADHYA PRADESH

2. STONE INSCRIPTION, BAJARANGGADH, DISTRICT GUNA

This inscription, engraved pn a slab fixed into the western wall of a fort, is in local dialect and Nagari characters. The record belongs to the reign of *maharajadhiraja* Balivvatasigha. Dated in Vikrama 1833 (mistaken for 1831) (AD *111 A),* it refers to the construction of the fort *(kota)* of Sarashauna *by phojadara Ran* Rama and to the expenditure of rupees five thousand incurred towards the same.

3. SATI INSCRIPTION, DHAEVIAPUR, DISTRICT JABALPUR

This inscription, engraved on a sari-stone, is written in Sanskrit language mixed with local dialect and Nagari characters. Dated in Vikrama 1401 (AD 1343), the record belongs to the reign *of Maharaja* Jiva Maladeva. It refers to the *sati* committed by Jaso, wife of Dhauma, who is son of Prademi Alau. It also mentions the name of the mason *(silavata)* Lashamiga [n*] goli.

MAHARASHTRA

4. VATAPI CHALUKYA COPPER PLATE INSCRIPTION, NALASOPARA, DISTRICT THANE

This copper-plate charter, consisting of three plates, was discovered from the village Nalasopara in District Thane. The charter is written in Sanskrit language and southern characters. The record belongs to the reign of Chalukya king Pulakesi (II). Dated in Saka 554 (AD 632), it records the grant of the village [Puduka] in Nasika-vishaya to a

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Information from: M.D. Sampath, M. Jayarama Sharma, T.S. Ravishankar, Jai Prakash, S. Swaminathan, K. Karuppaiah and S. Rajavelu of the Epigraphy Branch, Mysore, who found, examined and reported nearly three hundred and forty-six inscriptions of which the important ones are noticed here.

certain brahmana (name not clear) belonging to pingala-sagotra, to defray the expenses for performing the ritual *panchamahayajna.*

TAMIL NADU

5. CHOLA INSCRIPTION, KOLAPPAKKAM, DISTRICT CHENGALPATTU-M.G.R.

This inscription in Tamil language and characters, is engraved on the *kumuda* of the south side of the *ardha-mandapa* of Agastisvara Temple. Dated in the sixth year (AD 1221-22) of the reign of the Chola king Rajaraja (Rajaraja III), it records the stone construction of the central shrine *(koyil)* from *upana* to *stupi, ardha-mandapa, idaikkattu* (vestibule), *nritta-mandapa* (dancing hall), *sopana* in the temple of Tiruvagattisvaram-udaiya-nayanar by one Sengon-Tilllaivanan Kakkunayakan of the village Kulappakkam.

6. TWO TAMIL INSCRIPTIONS, PENNESVARAMADAM, DISTRICT DHARMAPURI

Of the two Tamil inscriptions, engraved on the *kumuda* below the niche of Durga in the Pennesvara Temple, the first one belongs to the reign of Chola king Tribhuvanavirachola, i.e., Kulottunga (III). It registers the gift of wet and dry lands at Merpatti for the food offerings and other services on the occasion of *Tribhuvanaviran-sandhi* to the deity Pennai-nayanar, probably for the merit of the king.

The second inscription, in characters of the thirteenth century AD, engraved at the same place, registers the gift often cows and an ox for maintaining a perpetual lamp to the deity Pennai-nayanar by Kuttadumdevar-nachchiyar Solanaimuludum-udaiyar, daughter of Vanakovaraiyar.

7. TWO HERO STONE INSCRIPTIONS, AMBALUR, DISTRICT NORTH ARCOT

Of the two Tamil inscriptions, the first one is dated in the twenty-fifth regnal year AD 1010 of Chola king Rajakesari Rajaraja (I). It states that Orripadan *alias* Orumugilappar Tittan, a washer-man (vannan) attacked the village Ammalu *alias* Vikramadityach-chaturvedimangalam in Aimpalurang-nadu and died after rescuing the cattle.

The second record, assignable to the same period on palaeographical grounds, registers the death of one Ravimodan Tirunilakantan of Suttamali-chaturvedi-mangalam after rescuing the cattle.

8. PALLAVA INSCRIPTION, CHINNAPALAMPAKKAM, DISTRICT NORTH ARCOT

This inscription, engraved on the eyebrow of a natural cavern on the hill locally known as *Sarukkumalai,* is written in Tamil language and characters. It belongs to the reign of Pallava king Nripatungavarman and dated in his tenth year (AD 855). It states that a Srikoyil was caused to be constructed for Si[m] hanandi-bhatarar of Periya-Pennagadam by one Siriya-nangaiyar, a courtesan (Sulaigal) of Pangala-nadu in the name of Kodukkar Virattoilar of the same nadu.

9. VIJAYANAGARA INSCRIPTION, *KAILAS*APURAM DISTRICT NORTH ARCOT

This Tamil inscription, engraved on the *adhishthana* in the temple of Srikailasanathar, belongs to the reign of Vijayanagara king Vira-Pratapa-Devaraya-maharayar. Dated in Saka 1310 (AD 1388), it states that as per the lease deed (adai-olai), executed by Kalappalar Arulali Tadan, a shepherd of Murugamangalapparru, Pichchak-kovan, son of Tiruvakkon, a shepherd from Attiyambur should measure ghee for maintaining a perpetual lamp to the deity Karunkaiyilayattu-

udaiyar in Marudarasa-padavidu. The record was attested to by a certain Vaduganathan.

10 .TAMIL INSCRIPTION, KUMBAKONAM, DISTRICT THANJAVUR

This Tamil inscription, in Tamil language and characters, is found engraved on the east wall of the shrine of Lakshminarayana, in the Sarangapani Temple. Dated in Saka 1427 (AD 1505), it states that Alvar Jiyar, a disciple of the pontiff Kandadai Nayan endowed money to provide for the food offerings to Tiruvali Alvar and Budattalvar. It was stipulated that the above food offerings were to be distributed to the itinerant Vaishnavite pilgrims.

II.VATTELUTTU INSCRIPTION, PERUMPADAI SASTA KOYIL, DISTRICT TIRUNELVELI

This inscription, engraved on a circular stone kept by the side of the Ayanar Temple, is in Tamil language and Vatteluttu characters of about the tenth century AD. It states that the oil mill *(chekku)* was set up by Milavur Appan Valutu in the name of the elites *(iraigal)* of [Me]rmangalam in [Su]rankudi-nadu.

ARABIC AND PERSIAN INSCRIPTIONS

DELHI

1.MUGHAL INSCRIPTIONS, DISTRICT DELHI

Among various Persian epigraphs copied from the Dargah of Khwaja Qutbud Din Bakhtiyar Kaki in Mahrauli, Delhi, three belong to Farrukh Siyar. Of these, one on the inner gateway of Farrukh Siyar in the holy shrine, calligraphed by 'Abdullah Shirin Raqam, records obviously the construction of the gateway by the efforts of the meanest of the confident slaves of Farrukh Shah, in the seventh regnal year, AH 1130 (AD 1718). The second inscription on the first gateway of Farrukh Siyar, in the said shrine, records the construction of a beautiful enclosure round the grave of the chief of the faith, i.e., Khwaja Qutbud Din Bakhtiyar Kaki, by the order of emperor Farrukh Siyar. The third inscription on the mosque of the above saint in the Dargah complex, assigns the erection of a beautiful mosque to his exalted majesty, emperor Farrukh Siyar, in AH 1130 (AD 1718).

2.INSCRIPTION OF NAWWABS OF AWADH, DISTRICT DELHI

This metrical epigraph in Persian from the tomb of Safdar Jang in the capital, records his passing away in AH 1167 (AD 1753-54).

3. EPITAPH, DISTRICT DELHI

This Persian record from the grave of Maulana Fakhrud Din in the compound of the Dargah of Khwaja Qutbud Din Bakhtiyar Kaki in Mahrauli, Delhi, registers the death of Fakhr Din,i.e., Fakhrud Din in AH 1199 (AD 1784-85). It was composed by Sayyidus-sh-Shuara (poet-laureate) Fakhrud Din Maqbul Ilahi, in AH 1222 (AD 1807-08).

GUJARAT

4. EPITAPHS, DISTRICT SURAT

A good number of epitaphic records in Arabic have been photographed from the Bohra graveyard called Qabrastan Devdhi Mubarak at Surat. These

'Information from: M.I. Quddusi, assisted by M.Y. Quddusi, G.S. Khwaja and M.A. Siddiqui, who copied, examined and reported one hundred seventy-three inscriptions during the year under review, out of which important ones are noticed here.

epitaphs provide names, dates of death and lineage of some of the leading Bohra personages, both men and women. Among such pious and learned deceased are: Sayyidi Rahmatullah son of Mulla Husainji (d. AH 1217/AD 1802); Sayyidi Hibatullah, son of Mulla Wali Muhammad, son of Sayyidi Luqmanji Sahib (d. AH 1220// AD 1806); Shaikh Sayyidi Jiwa Bhai son of Mulla Muhammad Husain (d. AH 1224/ AD 1809); Maryam Ami, wife of the great Dai Maulana Tayyib Zainud Din and mother of the great Dai Maulana Abdul Qadir Najmud Din (d. AH 1233/ AD 1818); Shaikh Ibrahim Ji, son of Shaikh Jiwa Bhai, son of Shaikh Sayyidi Miyan Sahib Luqmanji, son of Sayyidi Miyan Sahib Daud Bhai (d. AH 1236/ AD 1821); the grand pious (lady), Hala Bai Hakim Bu daughter of Mulla Abdul Qadir (d. AH 1243/ AD 1828), who was associated with the respected lineage of Maulana Izud Din and Sayyidna Tayyib Zainud Din; Shaikh Isa Bhai, son of Mulla Muhammad Ali (d. AH 1255/ AD 1839); Shaikh Ibrahim Shamsud Din, son of Mulla Abdul Qadir (d. AH 1277/ AD 1860), who was associated with the two pious Dais and his maternal uncles, Sayyidna Izud Din and Sayyidna Zainud Din; Ji Bai Sahiba Nimatullah Bai, daughter of Sayyid Ismail Ji Badrud Din and wife of Bhai Sahib Husain Bhai Izud Din(d. AH 1281/AD 1865); Bai Ratan Bai daughter of Shaikh Daud Bhai and wife of Wali Allah Abd-i-Ali, son of Shaikh Abdul Qadir (d. AH 1303/ AD 1886); Miyan Sahib Abdul Husain, son of Sayyidi Sadiq Ali (d. AH 1304/ AD 1886); Kulthum Bai, daughter of Shaikh Raushan Ali and wife of Sayyidi Ismail Ji Bhai Sahib Badrud Din (d. AH 1307/ AD 1890), and epitome of magnificence and munificence Bhai Hamza Bhai (son of) Bhai Sahib Abd-i-Ali (son of) Bhai Sahib Muhyiud Din (d. AH 1315/ AD 1898).

KARNATAKA

5. ADIL SHAHI INSCRIPTION, DISTRICT GULBARGA

This important Arabic record from a mosque in the fort at Gulbarga, though published (*Epigraphia Indo-Moslemica, 1907-8,* p.4, without plate) and listed *(Annual Report on Indian Epigraphy, 1958-59,* Appendix D, No. 100), is included again for review as the reading given in the former, is quite faulty, and in the latter, there is omission of the date AH 969. This record with a beautiful calligraphy in Thulth, assigns the construction of the mosque to Arab Khan in AH 969 (AD 1561-62), during the reign of Sultan Abul Muzaffar Ali Adil Shah.

MADHYA PRADESH

6. INSCRIPTION OF THE SULTANS OF MALWA, DISTRICT BHOPAL

This damaged but historically important metrical record in Persian (pl. LIII A), lying loose in the local mosque (Qadipura-Ki-Masjid) at Bhopal, assigns the construction of the mosque to (Malik) Mughithud Din, referred to as *Wazir-i-Arsa-i-Giti Panah* (i.e., Prime Minister of the Court of World-Asylum), in AH 832 (AD 1428-29). It may be added that the builder was attached to the court of Malwa Sultan Hoshang Shah.

7. MUGHAL INSCRIPTION, DISTRICT BHOPAL

This metrical record in Persian from Bhopal assigns the construction of the tomb of Shah Nihal, to Nawwab Begam (i.e., Sikandar Begam), during the reign of Akbar Shah II, in AH 1251 (AD 1835-36), corresponding to Fasli 1243.

8. INSCRIPTIONS OF NAWWABS OF BHOPAL, DISTRICT BHOPAL

This time five inscriptions ofNawwabs of Bhopal were copied from Bhopal. Of these, a brief Persian

record from the local graveyard, registers the name Nawwab Ghauth Muhammad Khan, the fifth Nawwab of Bhopal and specifies his ruling time between AH 1223 (AD 1808) and AH 1224 (AD 1809). One Samiud Din was the inscriber of the headstone.

The second inscription belongs to the local Jami Mosque, saying that the construction of the magnificent Jami Mosque started in AH 1248 (AD 1832-33), corresponding to Fasli 1240, at the instance of sovereign of Bhopal Nawwab Gauhar Begam (i.e., Sikandar Begam), daughter of Nawwab Ghauth Muhammad Khan Bahadur and bride of Nazirud Daula Nazar Muhammad Khan Bahadur and completed in AH 1273 (AD 1856-57), corresponding to Fasli 1264, with the great efforts of master builders and workers, at the cost of rupees five lakhs, sixty thousand, five hundred, twenty-one, and two annas and three pais, under the supervision of the inventor (i.e., architect) Muhammad Abbas.

The third Persian inscription in metrical form, composed by Farigh, assigns the construction of a Madrasa, i.e., college, in proximity to a water-reservoir for the sake of students to (Nawwab) Shahjahan Begam, the ocean of munificence. It further records that the construction work began in AH 1304 (AD 1886-87) and came to an end in AH 1307 (AD 1889-90).

The fourth epigraph from Sikandari Sarai records the construction of a good-looking *Musafir Khana,* i.e., an inn, by Shahjahan Begam, the ruler of the kingdom of Bhopal, in AH 1307 (AD 1889-90), for the sake of obtaining god's forgiveness to (her mother) Nawwab Sikandar Begam who had earlier departed for the next everlasting World.

The last versified epigraph in Persian, composed by Shahir pertains to the repair of a bridge at the order of Shahjahan Begam for which she was spoken highly of, and (her second husband) Mir Siddiqul Hasan Khan too had given his consent regarding the said order, in the year (AH) 1297 (AD 1880).

9. Miscellaneous Inscriptions, District Bhopal

Among the six miscellaneous epigraphs from Bhopal, the first one which is damaged, refers to the death of Shujaat Khan, obviously in AH 1200 (AD 1785-86) when the slab was inscribed. The second one relates to Muhammad Ali Khan, resident of Bundelkhand for whom the tombstone (Tawidh) was installed in AH 1244 (AD 1828-29), while the third one records the name Miyan Dust Ali Khan along with the date AH 1258 (AD 1842-43), obviously the year when he passed away. The fourth one is a metrical Persian record, registering the death of Qaim Khan, a gallant personality of a dignified family, in AH 1261 (AD 1845). The fifth record inscribed by Ambika Parshad pertains to a well, assigning its construction to Nawwab Nazirud Daula Umrao Dula Baqi Muhammad Khan Bahadur in AH 1275/AD 1858, corresponding to Vikram Samvat 1915. The last one is a loose slab from a local mosque, saying that this old mosque of late Nazar Muhammad Khan Wilati (Wilayati) was renovated by Ahmad Husain Khan Sahib Tahsildar, nephew of Mir Bakhshi Muhammad Hasan Khan Sahib Bahadur Nusrat Jang, in AH 1314 (AD 1896), by spending the amount rupees two thousand, one hundred and three, under the supervision of Rahimullah Khan. Sayyid Abdul Karim was the inscriber of the text.

10. Sarcophagus, District East Nimar

This badly damaged epigraph, copied from Waqf Qabrastan in Mahalla Ben Maidan, Burhanpur, points to the grave as that of Maqbul al-Makhduma,

Plate LIII



A



B

A, *Bhopal : inscription of the Sultans of Malwa;* B, *Bareilly : epitaph (AH 1267)*

Nadhirud Din Mahmud bin (i.e., son of) Muhammad Haji Khadimus Sultan recording her death in AH 887 (AD 1482).

11. Inscriptions of the Sindhiyas of Gwalior, District Gwalior

A couple of Urdu inscriptions come from Gwalior from Moti Masjid. The inscription on the main gate records the completion of Moti Masjid by Sri Sarkar Madho Rao in AH 1338 (AD 1919-20), corresponding to Bikrami, i.e., Vikram Samvat 1976 with the great efforts of Sayyid Ahmad (son of) Shafi Sahib, Wakil-i-Darbar (i.e., an agent of the court), the metrical text having been composed by Jalil. While the other metrical epigraph at the same place but innerside, records the foundation of the above mosque by Sri Sarkar Madho Rao in the same year, i.e., AH 1338 (but the chronogram yields the date AH 1337. The text was composed by Mudtar and inscribed by Sayyid Basir AH.

MAHARASHTRA

12. Gun Inscription, Daulatabad Fort, District Aurangabad

This two-worded Persian inscription, found on a gun kept near the booking office of the fort, reads Dushman-Kub, i.e., enemy striker.

13. Tughluq Inscription, Khuldabad, District Aurangabad

This historically valuable inscription in Persian from a local mosque near the Dargah of Khwaja Burhanud Din Gharib, appears to record the construction of the mosque (initial words of the epigraph covered under the masonry work, added later on), during the reign of Abdul Mujahid Muhammad Shah, son of Tughluq Shah as Sultan, in AH 729 (AD 1329).

UTTAR PRADESH

14. Miscellaneous Inscriptions, District Bareilly

Among the selected miscellaneous epigraphs from Bareilly which are under review, the earliest one dated AH 1059 (AD 1649) is an Urdu metrical record, registering the death of a saintly figure Shah Amirullah and erection of his tomb by Karimud Din. Here, it may be added that this record was installed later on, most probably in the last decades of the nineteenth century.

An epitaph couched in metrical Persian (pl. LIII B), registers the date of the death of Hafiz Yar Muhammad Khan, son of Khan Muhammad Yar and grandson of Hafiz Rahmat Khan, in AH 1267 (AD 1850-51). Another epitaph, records the death of an unexampled scholarly personality of his time 'Abdul' 'Aziz Khan' 'Aziz', grandson of 'Hafizul' Mulk Hafiz Rahmat Khan, in AH 1309 (AD 1891 -92) who was born in AH 1251 (AD 1835-36).

A loose epitaph, kept in the Maqbara Karimud Din, records the death of the wife of Munshi Karimud Din Ahmad in AH 1289 (AD 1872), while another metrical Urdu record on the gate of a house, registers its construction in AH 1295 (AD 1878) and the name of the composer is given as Hatif. It also states that this is the house of Shaikh Karimud Din Ahmad, son of Shaikh Badrud Din Ahmad. An inscription from a local mosque assigns its construction to Karimud Din, son of Shaikh Badrud Din in AH 1294 (AD 1877-78), the metrical text having been composed by the builder himself with the pen-name Karim. As recorded in another metrical Persian inscription, Karimud Din, son of Badrud Din laid the foundation of a Madrasa for

the Muslims for the study and teaching of the holy Quran, in AH 1294 (AD 1877-78) and after its completion in AH 1297(AD 1879-80), dedicated it to the path of Allah.

An epitaph bearing Urdu inscription, records the death of Nawwab Niyaz Ahmad Khan Hosh alias Banne Miyan in AH 1309, corresponding to AD 1892. The record also says that the deceased was a reputed physician, historian and a poet with the pen-name Hosh. The text was composed by Khwahan. Another Urdu inscription from a local tomb records its foundation by Munshi Karimud Din Ahmad, son of Shaikh Badrud Din, son of Shaikh Muhammad Daim Ali, Faruqi Chishti Faridi, in his own lifetime for himself under the supervision of Sayyid Kazim Ali Mistri (i.e., Mason) in AH 1311 (AD 1894).

III. NUMISMATICS AND TREASURE TROVE

WEST BENGAL

1. METAL IMAGES AND MISCELLANEOUS OBJECTS, CALCUTTA

Seven detained parcels in the office of the Postal Customs Department in Calcutta were examined by a team from the Calcutta Circle of the Survey of which metal images of Nataraja, twenty four-armed female deity, bowls, medals, flute, etc., were found to be antiquities.

2. STONE IMAGES OF VISHNU AND MANASA, DISTRICT JALPAIGURI

One stone image of Vishnu belonging to *circa* eleventh-twelfth century and the other of goddess Manasa were found in the Rajganj Police Station, District Jalpaiguri, during the course of inspection by a team from the Calcutta Circle of the Survey.

3. STONE IMAGES OF SIVA, UMA-MAHESA AND RAMATANKA, DISTRICT MALDA

During the course of inspection by the Calcutta Circle of the Survey, two stone images, one of Lokesvara Siva and the other of Uma-Mahesa were found in the Office of the Superintendent of Customs, Malda Preventive Unit. Besides, the team also examined one Ramatanka.

4. STONE AND METAL IMAGES, DISTRICT MURSHIDABAD

During the course of inspection, two metal icons of Radhika; a metal and a stone image of Venugopala and one stone **Siva-*linga*** were examined in the Baharampur Police Station by a team from the Calcutta Circle of the Survey.

5. METAL AND STONE IMAGES, DISTRICT MURSHIDABAD

A metal image of Radhika and stone images of Mahishamardini Durga, Vishnu and a male deity etc., were examined by a team from the Calcutta Circle of the Survey.

6. STONE IMAGES, DISTRICT NORTH DINAJPUR

The Calcutta Circle of the Survey, in the course of inspection, noticed one seated six-armed female deity, one broken stela and a Buddha image in the Office of the Superintendent of Customs, Raiganj Customs Preventive Unit.

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[1] Information from: The Calcutta Circle of the Survey

IV. OTHER IMPORTANT DISCOVERIES

ANDHRA PRADESH

1. TEMPLES, LOOSE SCULPTURES AND INSCRIPTIONS, DISTRICT CUDDAPAH

The Department of Archaeology and Museums, Government of Andhra Pradesh, Hyderabad, reported the discovery of temples, loose sculptures and inscriptions belonging to the Vijayanagara period.

2. GANGA SEAL AND INSCRIBED POTTERY, TALAKAD, DISTRICT MYSORE

The Director of Archaeology and Museums, Government of Karnataka, Mysore, reported the discovery of a terracotta circular seal having 1" diameter. In the centre is a sitting lion with uplifted tail. Below is the writing in old Kannada script of eighth century AD. It reads 'Ganga Rachasiva'. Perhaps it refers to Sivamara, the Ganga king. The Kannada letters are very elegantly written. It is intriguing to find a lion on this seal as elephant was the royal emblem of the Gangas of Talakad.

Another important find is an inscribed pottery piece with the name Rachadeva in eighth century Kannada script. This may refer to an individual by name Rachadeva perhaps Rachamalla, the Ganga king.

KERALA

3. CIST BURIAL SITE, AEERAM, DISTRICT KOLLAM

P. Rajendran of the Department of History, Kerala University, Kariavattom, found cist-burial at Aeeram in Pathanapuram taluk of District Kollam. They were exposed during a digging for the foundation work. The orthostats were found almost at one meter depth and the three chambers were seen adjacent to each other in north-south direction. Two chambers have same size having 2.9 m length and 1.5 m width while the third one has 2.7 m length and 1.5 m width. Slabs having 3 m and 2.9 m length, are also seen on their front and back sides. Each chamber has separate rocky lids having the measurements of 1.3 m length, 0.9 m width and 0.2 m thickness. The chambers were filled with soil and one of the chambers revealed a few small pottery and iron implements. Even though several cist-burials have been reported here in south Kerala, such huge rock-slabs were rarely found in this region while these are located in Wynad region. The site may yield valuable megalithic antiquities.

4. MEGALITHS VELLINEZHY, DISTRICT PALAKKAD.

The Department of Archaeology and Museums, Government of Kerala, carried out excavation at Vellnezhy in Ottapplam taluk. The site is extended to a small river, where megalithic burials were traced apart from a rock-cut cave nearby along with iron

implements such as sword, wedges, plough-share, ring-stand and megalithic pottery. The objects recovered from the cave show similarity with those found at Porkalam and Kadavallur but the legged-jars are however, conspicuously absent.

5. HISTORICAL SITE, SUGNU, DISTRICT CHANDEL

The Department of Archaeology, Government of Manipur, Imphal, during the course of exploration at a site called Chingjakok at Sugnu, discovered a place associated with the capital punishments of ancient kings of Manipur.

6. INSCRIPTION AND ROCK ENGRAVINGS, KHOUPUM, DISTRICT TEMENGLONG

The Department of State Archaeology, Government of Manipur, under the direction of Bheigya Singh, assisted by K. Indrani Devi, M. Jibanlata Devi and K. Gunindro Singh, reported the discovery of one stone inscription of eighteenth century and rock engravings at Khoupum (fig. 15). Khoupum valley lies to the west of Imphal town. The stone inscription stands at the area of Thanagong village within Khoupum valley.

The rock engravings under report are found at "Khoupum Chingkao" at an elevation of A.S.L. The engravings are found executed in a well prepared sandstone rubbed surface of 5..50 m x 3..95 m comprising two parts, with forty-six specimens, facing west.

ORISSA

7. ROCK-CUT CAVES, DHARMASHALED, DISTRICT JAJPUR

A. Pradhan reported the discovery of a few stone flakes and fluted core form Devli and Kaima hills. A round butt end variety of polished stone celt and chert flakes have also been collected from Langudi hill.

8. NAKTIDEVI STONE IMAGE INSCRIPTION, DISTRICT ANGUL

A. Pradhan reported the discovery of one stone image with two inscriptions in proto-Devanagari script (*circa* ninth-tenth century) from the village Naktinali in Athamallik tehsil.

TAMIL NADU

9. INSCRIPTIONS AND SCULPTURES, KOLAPPAKKAM, DISTRICT CHENGALPATTU -M.G.R.

G. Thirumoorthy of the Madras Circle of the Survey, reported the discovery of a late Pallava Tamil inscription assignable to Nandivarman II (AD 730-796) and a ruined Jaina temple with a Tirthankara image *of circa* eleventh century AD.

10. ROCK PAINTINGS, S.KOLLUR, DISTRICT VILLUPURAM - RAMASAMY PADAYACHIYAR

G. Thirumoorthy of the Madras Circle of the Survey, discovered rock paintings in red ochre, depicting hunting scenes on a boulder, datable to iron age.

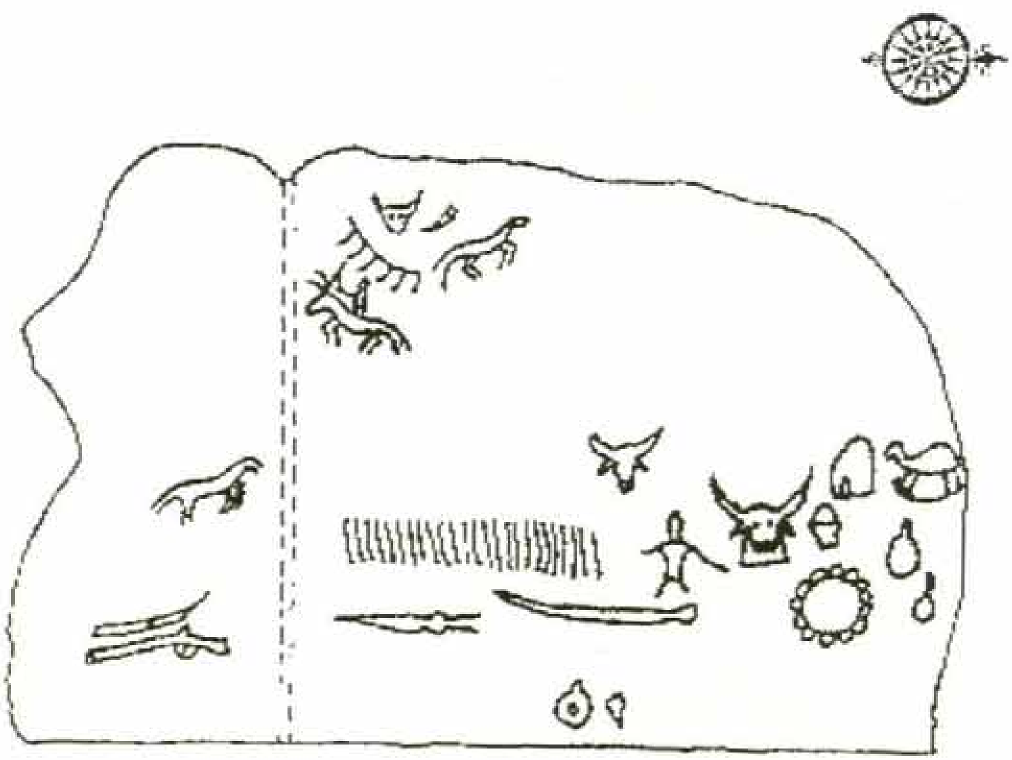
UTTAR PRADESH

11. TEMPLE AND SCULPTURES, DISTRICT ALMORA

Suresh Kumar Dubey, of the Regional Archaeological Unit, of the State Archaeology Department of Uttar Pradesh, sporadically surveyed a number of ancient temples at Dyuli Jakh, Andoli, Jyoli and Sumela villages in Baramandal tehsil of District Almora. On Kaflikhan-Bhanoli motor road a modern temple known as Narayan-Deval was noticed. The temple is built with the ruins of an ancient temple. An image of Vishnu of medieval period was

Fig 15

STONE ENGRAVING OF KHOUPUM
DISTT. TAMENGLONG



NOT TO SCALE

found under worship in its Sanctum. About 3 km away from this temple site, there lies a famous modern temple named as Chitresvara-Mahadeva Mandir, containing images of *seshasayi* Vishnu and Ganesa belonging to the medieval period.

In the villages of Chomu, Phalsima and Divya in the vicinity of Almora, there lie stone sculptures of *seshasayi* Vishnu, Mahishasurmardini and Ganesa belonging to the medieval period.

12. Ancient Temple Ruins, District Nainital

The Regional Archaeological Unit, Department of State Archaeology, Almora, Uttar Pradesh, reported the discovery of ruins of ancient temple, belonging to medieval period, located in Mauna village in Nainital. Important images of Surya and Lakshmi-Narayana have been found lying here and there along with a *chaitya-gavaksha,* etc.

13. Mesolithic Site, Gadwari, District Pratapgarh

V.D. Misra, M.C. Gupta and Avanish Chandra Misra, brought to light a mesolithic site in the vicinity of village Gadwari at a distance of 21 km north-east on Pratapgarh-Amethi Road. Retouched backed blades, flakes and flake-fragments made on chert were collected from alkaline land surface. The site has developed bad land topography. The artefact-bearing horizon is marked by concretions.

V. RADIOCARBON DATES[1]

The following radiocarbon measurements were made on archaeological and quaternary samples by a team of scientists at the Physical Research Laboratory, Ahmedabad. All the dates are based on 5730 ± 40 years half-life value of radiocarbon. The year 1950 is the base year to convert these dates into AD/BC scale. All the dates are uncorrected for C variations.

GUJARAT

1. KOTHIYA KHADI, MAHI BASIN

i. PRL-1979. Quaternary — 3660 ± 90
Organic part of a soil horizon
Depth 280-300 cm

ii PRL-1980. Quaternary — 1760 ±80
Organic part of soil horizon
Depth 10-20 cm

2. MUJPUR, MAHI BASIN

i PRL-2002. Quaternary — 2850 ± 90
Organic part of soil horizon
Depth 3 m

it PRL-2003. Quaternary — 3320 ± 90
Organic part of soil horizon
Depth 6 m

'Contributed by M.G. Yadava, R. Ramesh and S. Kusumgar of the Physical Research Laboratory, Ahmedabad. Further details of the samples can be obtained from excavators.

[2]Samples submitted by: 1 -3, Department of Geology, M.S. University of Baroda, Vadodara-390002; 4-5, 8, Physical Research Laboratory, Navrangpura, Ahmedabad-3 80009; 6-7, Division of Soil Resources Studies' National Bureau of Soil Survey and Land use Planning, Nagpur-440010 and 9-11, Deccan College Pune-411006.

3. SINGROL MAHI BASIN

i PRL-2004. Quaternary — 280 ± 80
Organic part of soil horizon
Depth 2.5 m

KARNATAKA

4. OFF MANGALORE

i PRL-1972. Quaternary — MODERN
Carbonates from ocean sediment
Depth 0-10 cm; Core C-49

ii. PRL-1971. Quaternary — 1330 ± 80
Carbonates from ocean sediment
Depth 50-60 cm; Core C-49

.iii. PRL-1970. Quaternary — 2090 ± 80
Carbonates from ocean sediment
Depth 90-100 cm; Core C-49

MADHYA PRADESH

5. DANDAK CAVE, DISTRICT JAGDALPUR

i. PRL-1994. Quaternary Active — 4780 ± 90
stalagmite Depth 267.3-278.8 mm from
the tip part

ii. PRL-1993. Quaternary Active — 1970 ± 80
stalagmite Depth 127.5-135.8 mm from
the tip part

iii. PRL-1995. Quaternary — 1310 ± 80

Active stalagmite

Depth 12.5-22.3 mm from the tip part

iv. PRL-1997. Quaternary Active stalagmite Depth 176.8-185.3 mm from the tip part	1940 ± 80
v. PRL-1996. Quaternary Active stalagmite Depth 72.3-79.0 mm from the tip part	1640 ±80

MAHARASHTRA

6. GHODASGAON, DISTRICT AMRAVATI

i.PRL-1957. Quaternary Organic part of a soil pit Layer, BC horizon Depth 126-145 cm	4440±90

7. TAMASVADA, DISTRICT WARDHA

i.PRL-1958. Quaternary Organic part of a soil pit Layer Al horizon Depth 16-41 cm	1570± 120

ORISSA

8. GUPTESVARA CAVE, DISTRICT KORAPUT

i PRL-1969. Quaternary Active stalactite Surface part; 2 to 3 mm depth	880 ± 100
ii. PRL-1992. Quaternary Active stalactite Depth 112.8-156.0 mm from the base	3780 ± 90
iii. PRL-1998. Quaternary Active stalactite Depth 2.5-10.8 mm from the base	4270 ± 90

iv. PRL-2001. Quaternary Active stalactite Depth 456.0-458.0 from the base — 1390 ±80

v. PRL-1999. Quaternary Active stalactite Depth 260.8-270.5 mm from the base — 3800 ± 90

vi PRL-2000. Quaternary Active stalactite Depth 390.3-392.8 mm from the base — 2430 ± 90

RAJASTHAN

9. DONDER KHERA, DISTRICT DHOLPUR

i. PRL-1824. PGW, Black-and-Red ware Charcoal from Trench Al, Qd 4, Ash Layer 2, Depth 50 cm — 2530 ±110

10. BALATHAL, DISTRICT UDAIPUR

i. PRL-1937. Chalcolithic Charcoal from Trench C Y2 Locus SE; Layer 16, Depth-2.51 m — 3980 ± 90

ii. PRL-1933. Chalcolithic Charcoal from Trench OE Locus SW; Layer 23. Depth-4.98m — 5770 ±100

UTTAR PRADESH

11. BAGWALIPOKHAR, DISTRICT ALMORA

i PRL-1706. Early historical Charcoal found along with Pottery and undressed stones — 14,000 ± 200

VI. PALAEOBOTANICAL AND POLLEN ANALYTICAL INVESTIGATION

The report incorporates the results of studies carried out at Birbal Sahni Institute of Palaeobotany, Lucknow, on the botanical remains recovered from Shikarpur in the Runn of Kachchh, Gujarat.

GUJARAT

1. SHIKARPUR (23° 15'N; 70° 39' E), DISTRICT KACHCHH

Pollen analytical studies have been carried out of seven soil samples from four trenches at Shikarpura, Harappan settlement (*circa* 2500-2200 BC). The study has revealed mainly the pollen of non-arboreals such as Poaceae, Cyperaceae, Chenopodiaceae/Amaranthaceae, *Polygonum* sp., etc. Arboreals are few and reported by stray pollen of *Ficus* and *Acacia* species. The overall pollen assemblage shows the open nature of vegetation with arid climatic condition. However, the frequent record of pollen of Chenopodiaceae/Amaranthaceae indicates the prevalence of saline condition around the site of investigation, during the course of deposition of the sediments. The study of pollen analysis supports the botanical investigations done earlier of macroremains *viz.,* seeds, fruits and wood charcoals from Shikarpur during the Harappan period.

HARYANA

2. BALU (29° 40' N; 76° 22' E), DISTRICT KAITHAL

A large number of grains and seeds have been studied to reconstruct the agricultural economy of ancient settlers at the site, during pre-Harappan (*circa* 2300-2000 BC) and Mature Harappan (*circa* 2000-1700 BC) periods. The finds of cereals and legumes from pre-Harappan levels (pl. LIV, 1 -4,6) include rice *(Oryza sativa),* hulled-barley *(Hordeum vulgare),* two forms of wheat: dwarf-wheat *(Triticum sphaerococcum)* and bread-wheat (*Triticum aestivum),* green gram/ mung (*Vigna radiata),* horse-gram/Kulthi (*Dolichos biflorus)* and common vetch (*Vicia sativa).* Settlers during this period also used to grow musk-melon/kharbuza *(Cucumis melo)* and water-melon/tarbuza *(Citrullus lanatus).* Melons are eaten raw as dessert. Musk-melon is indigenous to Africa. Wild forms are found only in eastern tropical Africa south of Sahara. There are several forms under *Cucumis melo,* such as *Cucumis melo* var. *momordica* (Phut), *C. melo* var. *Utilissimus*

[1]Contributed by: K.S. Saraswat, Chanchala Srivastava and Anil Kumar Singh Pakharia of the Birbal Sahni
Institute of Palaeobotany, 53, University Road, Lucknow 226007.

Plate LIV



Balu : seed and fruit remains, pre-Harappan, 1, rice (oryza sativa); 2, hulled-barley (hordeum vulgare), 3,dwarf-wheat (triticum sphearococcum); 4, bread-wheat (triticum aestivum); 5, wild-jujube/jharberi (ziziphus nummularia); 6, green-gram/mung (vigna radiata); 7, horse-gram (dolichos biflorus); 8, common vetch (vicia sativa); 9, musk-melon (cucumis melo); 10, water-melon (citrullus lanatus); 11, chebulic-myrabolan/harra (terminalia chebula)

Plate LV



Balu : seed and fruit remains, Mature-Harappan, 1, rice (oryza sativa);2, hulled-barley (hordeum vulgare); 3,naked-barley (hordeum vulgarevar. nudum); 4, dwarf-wheat (triticum sphearococcum); 5, bread-wheat (triticum aestivum); 6,horse-gram (dolichos biflorus); 7, green-gram/mung (vigna radiata); 8 , lentil (lens culinaris); 9 , field-pea (pisum arvense)

(kakri), etc. Seeds of *Cucumis sativus* (*kheera)* are also of similar shape. A few vestiges of seeds comparable to those of melon are known from Harappa from the porous earth of earthenware. These were too brittle to be lifted up. Seeds in healthy state of preservation from Balu have shown close resemblance with those of musk-melon. The water-melon (*Citrullus lanatus*) is reported to be feral in the warm parts of the globe, but it is truly wild or native only in sandy, dry areas of south Africa, chiefly in the Kalahari desert.

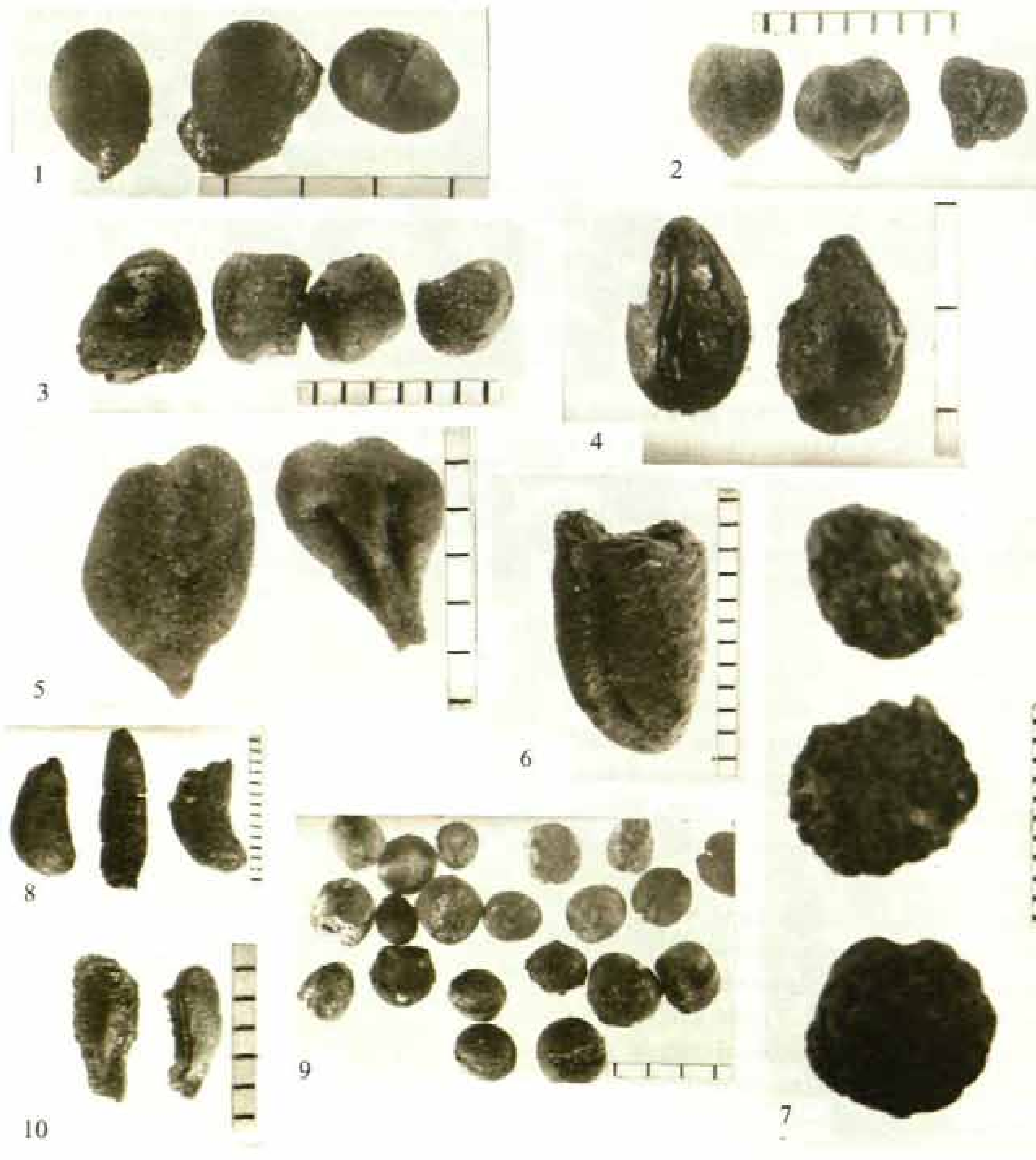
It occurs in two biochemical forms, i.e., bitter and non-bitter. Non-bitter fruits are a source of food and water for the Kalahari Bushmen. Known as 'Citrons', these are regarded as cultivars of the water-melon, not as progenitors. Broken seeds of water-melon from Balu provide the first definite evidence of its cultivation in the context of Harappan civilization.

Fruit remains (pl. LIV) of wild jujube/jharberi (*Ziziphus nummularia*) and Chebulic-myrabolan/ harra (*Terminalia chebula*) have also been found. Straggling shrubs of the former are commonly found around the site. Jharberi fruits are edible. Chebulic-myrabolan fruit is an important tanning material, having laxative, stomachic, tonic and alternative properties. In Ayurveda the fruits, with those of *anwla* and *bahera,* form a constituent of *triphala,* an important medicine used for a host of ailments. Trees are found throughout India, chiefly in the deciduous forests. Exploitation of chebulic-myrabolan for medicinal use by the settlers of Balu, during pre-Harappan times, is to be reckoned with.

From the succeeding Mature Harappan levels (*circa* 2000-1700 BC) the remains (pl. LV) of rice, hulled-barley, dwarf-wheat, bread-wheat, horse-gram, green-gram, common vetch and jharberi (pl. LVI, 7,9) are of the same kinds as from pre-Harappan period. However, naked-barley *(Hordeum vulgare* var. *nudum),* lentil *(Lens culinaris)* (pl. LV, 8), Egyptian clover/ barseem (*Trifolium alexandrinum*), field-pea *(Pisum arvense),* chick-pea/gram *(Cicer arietinum),* grass-pea/khesari *(Lathyrus sativus)* and til *(Sesamum indicum)* are new finds (pl. LVI, 1-4), suggesting a rich and varied crop economy. A broken stone of date *(Phoenix* sp.) and two seeds of grape (*Vitis vinifera),* either fresh fruit or in the form of raisin (pl. LVI, 5-6), suggest that these fruits were in the subsistence economy. These have furnished minor but very important nutritional complements. Kundroo *(Coccinia cordifolia)* commonly grows as a wild climbing herb (pl. LVI, 10). Its fruits turn scarlet when ripe and might have been consumed raw. Unripe green fruits might have been used as vegetable.

Most important find from the Mature Harappan period at Balu is garlic *(Allium sativum)* (pl. LVI, 8). The remains of highly carbonized pieces of cloves have been encountered. Garlic's precise origin, most likely in Central Asia, predates written history. References to onions, garlic and leek as food, medicine or religious objects can be traced back to the first Egyptian dynasty (about 3200 BC) and to the biblical account of the exodus of the Israelites from Egypt (1500 BC). Introduction of onion and garlic into Egypt must have occurred much earlier, but the definite inferences will always be subject to dispute because of the nature of artistic representations and the problems of identifying plants from the hieroglyphs. In the *'Codex Ebers',* an Egyptian medical papyrus dating to about 1550 BC, of the more than eight hundred therapeutic formulae, twenty-two

Plate LVI



Balu : seed and fruit remains, Mature-Harappan, 1, Egyptian clover/barseem (trifolium alexandrium); 2, chick-pea/gram (cicer arietinum); 3,grass-pea/khesari (lathyrus sativus); 4, sesame/til (sesamum indicum); 5, grape/raisin (vitis vinifera); 6,(date phoenix sp.); 7, wild-jujube/jharberi (ziziphus nummularia); 8, garlic clove (allium sativum); 9, common vetch (vicia sativa); 10, ivy-gourd/kundroo (coccinia cordifolia)

mention garlic for a variety of ailments. For the wealthy occupants of third and second millenia, old tombs in Egypt, a variety in funeral offerings reflecting a wide range of diet in their lifetime, which include garlic also. Now, Balu in India has furnished the sole record of garlic, in the archaeological context of south and southeastern Asia. The evidence is, therefore, to be reckoned with.

3. BANAWALI (29° 37' 5"N; 75° 23' 6"E), DISTRICT HISSAR

In continuation of the investigations on carbonized remains of grains, seeds and fruits from Banawali *(1994-95,* p.96), more than thousand pieces of wood charcoals from pre-Harappan *(circa* 2750-2500 BC) and Mature Harappan *(circa* 2500-2000 BC) levels were processed for section cutting and anatomical study. From pre-Harappan period, the charcoal remains of trees which still grow commonly in the surrounding region and may be looked upon as indicating their use for fuel and other purposes, have been found belonging to babul *(Acacia nilotica),* jhandi *(Prosopis spicigera),* siris *(Albizia lebbeck),* gular *(Ficus glomerata),* kendu *(Diospyros montana),* jujube *(Ziziphus* sp.), khajoor-palm *{phoenix* sp.- cf. *P. sylvestris),* kareel *(Capparis aphylla)* and farash *(Tamarix articulata),* mulberry *(Morus alba),* wood charcoals suggest the cultivation of this tree for the sake of its fruits. Quality timber of teak *(Tectona grandis)* was exploited from the forests of central India.

From the deposits of succeeding Mature Harappan phase, the wood charcoals ofbabul, jhandi, siris, jujube, teak, mulberry, kendu, kareel and farash are of the same kinds as from pre-Harappan levels. However, charcoals ofpipal *(Ficus religiosa),* salai *(Boswellia serrata),* pilu *(salvadora* sp.) either karangi *(Caeselpinia crista)* or kanderi (C *decapetala)* and bamboo *(Bambusa* sp.) have also been identified. Settlers in this phase also exploited deodar *(Cedrus deodara)* wood from the Himalayan forests. Wood charcoals of Jamun *(Syzygium cumini),* lemon or some form of orange type *(Citrus* sp.) and pomegranate *(Punica granatum)* are of particular significance, suggesting that these fruit trees were taken into cultivation, by the settlers at Banawali, during Mature Harappan period. Further work is still in progress.

The wood finds of babul, jhandi, siris, gular, kendu, jujube, khajoor-palm, kareel, farash, pipal, salai, pilu and karangi or kanderi suggest that these trees were of common occurrence in the immediate vicinity and some distant achievable regions exploited by Banawali settlers. The demarcation line of arid zone to the north of Rajasthan, intersects two districts in Haryana *viz.*, Mahendragarh and Hissar. The tree and shrub taxa represented by wood charcoals from Banawali are the constituents of deciduous forest, characteristic of arid and semi-arid regions. The wood charcoals constitute only a fraction of biological material and reconstruction of the environment on the basis of these alone could not be possible.

Plate LVII



Government Museum, Agartala : Bhairava

VII. MUSEUMS

1. GOVERNMENT MUSEUM, AGARTALA

The museum acquired a stone image of Bhairava (66 cm x 29.5 cm) from Paharpur, Somamura sub-division, Tripura (West), through donation. The pot-bellied deity (pl. LVII) with round eyes is datable to *circa* eleventh-twelfth centuries AD. With beard and moustaches, he is carved with snake ornaments and a garland of skulls. The deity has a ferocious appearance and holds a dagger and skull-cup in his right and left hands respectively.

2. GOVERNMENT MUSEUM, AJMER

During the year under review, the museum acquired six sculptures, ranging in date from *circa* eleventh-twelfth centuries, through the incharge, Police Station, Thanwala in Nagaur.

One new wall show-case has been provided for copper plates in the gallery. The museum also undertook repairs of seventy-four pedestals in the sculpture gallery. The galleries in the museum were made more attractive with educative lables and for sufficient light, electric fittings were also provided. The facilities for research were also made by the museum.

3. ALLAHABAD MUSEUM, ALLAHABAD

The museum acquired through purchase ninety-seven antiquities, art objects and documents to enrich its collection, comprising eleven gold, thirty-nine silver coins, eighteen miniature objects, fifteen beads of semi-precious stones, seven terracotta seals/sealings, one bronze, two miniature paintings/sketches, three decorative art objects, etc.

Of these, mention may be made of a stone pillar depicting *Krishna-lila* scenes in round, on a lotus pedestal; an ivory comb showing *chira-harana* on one side and Krishna-Sudama on the other; an ivory piece carved with *Ganesa-janani* in Orissan style; four numbers of iron arrow-head from Kausambi; a bronze image of Vishnu of twelfth century; miniature portrait of Amichandji with date besides nine gold coins of Kushan and Gupta periods. The exploration conducted in the mid-Ganga valley by the museum, resulted in the discovery of stone sculptures and potsherds from the two sites, Lachchagir and Meja.

Three national level seminars on the 'Date of Buddha', 'Buddhist Art and Architecture' and 'Motifs in Indian Art' were held in the museum besides some special lectures by V.N. Misra, D.P.Chattopadhyaya, B.N.Goswami, Jai Singh Niraj and Bishan Tandon including workshops and painting, clay-modelling and a short-term course on 'History of Indian Art and Culture'.

4. ARCHAEOLOGICAL MUSEUM, BODHGAYA

The museum has been enriched by taking over forty-five antiquities in stone from the district

Plate LVIII



A



B

Bodhgaya Museum : A, *Buddha in dhyana-mudra;* B, *standing Maitreya*

authority for display in the museum. The objects included images of Buddha (pl. LVIII A) and Bodhisattvas (pl. LVIII B), votive stupas (pl. LIX A) and door-jambs (pl. LIX B) belonging to the period ranging from *circa* fourth-fifth to ninth-tenth century.

5. INDIAN MUSEUM, CALCUTTA

During the year under review, the museum enriched its collection by acquiring a terracotta figurine of Mahishamardini. The Inscription Gallery of the museum in first floor was dismantled for reorganization. Two galleries *viz.,* bronze and minor antiquity, were strengthened by installing a close circuit television.

6.ARCHAEOLOGICAL MUSEUM, SINGHPUR PALACE, CHANDERI

During the period under review, the museum acquired some stone sculptures, belonging to the Pratihara/Rajput periods, datable to the tenth century. An image of Brahma has also been displayed in the Gallery (2), found during exploration. A few life-size stone images of tenth century have also been displayed on masonry pedestals in the courtyard of the museum.

The work of setting up and organizing the museum galleries is nearing completion. The displayed antiquities in four galleries have been provided with write up, labels, blow-ups of the site, including the important protected monuments. The display of antiquites in the other galleries is in progress.

7. GOVERNMENT MUSEUM, CHENNAI

The museum acquired the following objects as treasure trove *viz.,* one Mahishasuramardini and bottom portion of a bell from village Paravattankattalai, Kumbakonam taluk, District Thanjavur; an image of Devi from Kumbakonam, District Thanjavur; icons ofNataraja, Ganesa, Parvati, Umasahita and Balasubrahmanya from village Peillamangalam, taluk Nidamangalam, District Nagapattinam; seated Vishnu, Srinivasa and broken bells from village Tirumangal, taluk Nannilam, District Nagapattinam. The museum also received a seated lady figure besides a Dipa-Lakshmi, Navanita-Krishna and Kali from the Judicial Magistrate, Vellore.

8. MAHARAJADHIRAJA LAKSHMISHVARA SINGH MUSEUM, DARBHANGA

During the period under review, the museum acquired furniture items, ivory *hauda,* image of Durga in addition to some art treasures.

9. ARCHAEOLOGICAL MUSEUM, RED FORT, DELHI

During the period, photo documentation of seven hundred coins of medieval period preserved in the museum, has been completed. Some of the show-cases have also been repaired.

Iron-grills have been fixed in the windows of strongroom as security measure.

10. ASSAM STATE MUSEUM, GUWAHATI

During the period under review, the museum acquired a good number of copper coins from Bargaon. A big hoard, comprising two thousand and twenty-five copper coins, was also collected from Tulip Tea Estate, near Tejpur. H.K.Barpujari, Guwahati University, donated seven hundred and thirty-three rare books on history, art and culture, geography besides some journals to the museum library.

In connection with the inaugural ceremony of the annexe building with its new painting /freedom fighter's gallery and an auditorium, a lecture by S.K.Saraswat of the National Museum for Natural

Plate LIX



A



B

Archaeological Museum, Bodhgaya : A, votive stupa; B, inscribed door-jamb

Plate LX



A



B

Salar Jung Museum : A, *an exhibit in the exhibition on contemporary paintings; Archaeological Museum, Ratnagiri :* B, *a view of the museum gallery*

History, New Delhi, on "Role of Natural History Museums in the Protection of Natural Heritage" was arranged on December 15,1996.

11. ARCHAEOLOGICAL MUSEUM, GWALIOR

Repairing of dilapidated false ceiling in Gallery Nos. 1 -3 and verandah, levelling and developing of open ground in front of hospital and jail building for laying out garden have been done along with fixing of iron-gate in the nearby *baori* for the protection of water pump. Wooden benches with cushions have been provided for the visitors.

12. SALAR JUNG MUSEUM, HYDERABAD

During the period under review, the museum organized mobile exhibitions on the following themes *viz.,* Colours from the Handicapped (17-2-1996 to 16-5-1996); Salar Jung Museum Collections: A Glimpse (20-6-1996 to 25-8-1996); Exhibition on paintings by students (22-2-1997). These were taken to various places within the city as well as to the two neighbouring Districts, Ranga Reddy and Medak, in order to acquaint the viewers with the museum.

The museum also celebrated the Children's Day (November 14-20, 1996). Upto the age of twelve years were allowed free entry into the museum. In all, three thousand six hundred and forty-three students, accompanied by three hundred and ten teachers from one hundred and twenty-six educational institutions visited the museum. In addition, the museum also couducted essay/elocution contests in four languages, i.e., Telugu, Hindi, English and Urdu for school and college students. It also organized drawing/paintings competition for the students of class IX, particularly for the disabled children. On the museum foundation day (16-12-1996) prizes and certificates were distributed to the successful participants.

To mark this day, a special exhibition was held to display the contemporary paintings (pl. LX A) in the Salar Jung Museum. As a part of museum week celebration, a Rangoli competition was held exclusively for ladies, coinciding with the festival of Pongal, followed by a prize distribution ceremony. There were about forty-five participants of different groups.

Also arranged were the special lectures (8-1-1997) delivered by J.Veeraraghavan on the Role of Museum in Education; Dasarathi on Art Collection in the Andhra State Museum (9-1-1997); M. C. Ganorker on Preservation of Marble Statues and Related Studies (12-1-1997), and Rahmat Ali Khan on Exchange visit to Museum of Iran (31-1-1997).

The museum celebrated the hundred and eleventh birth centenary of Salar Jung III from February 22 to 27,1997. To mark this occasion, a mobile exhibition to display the paintings done by the school students was inaugurated by the Hon'ble Chief Justice, High Court of Andhra Pradesh. The best museum employees were also felicitated on this occasion. To mark this celebration, three memorial lectures were delivered by the renowned scholars *viz.,* Persian literature during the Asaf Jahi period by Yaqub Omer (23-2-1997); Manuscripts of Hyderabad in Rampur Raza library by W.H.Siddiqi (24-2-1997) and Qutb Shahi and Mughal Architecture with special reference to Charminar by R.Nath (25-2-1997).

13. GOVERNMENT MUSEUM, JHANSI

During the period under review, the museum acquired, through purchase, twenty-five art objects which include four stone sculptures, five terracotta

figurines, five ivory objects, one manuscript, one brass image, eleven miscellaneous items and one thousand fifty-seven coins comprising twenty-one gold, seven hundred and eighty-one silver and eight hundred and fifty-five copper.

14. Archaeological Museum, Khajuraho

A masonry pedestal has been prepared to properly arrange the heavy sculptures in the reserve collection (Jardine Museum); worn-out wooden pedestals in different galleries of the museum have been renovated for a fresh look.

Vinyl flooring has been suitably provided to the museum.

15. Archaeological Museum, Konarak

The museum has been given a face-lifting by painting the building and attending to the minor repair works. A counter has been installed for the sale of departmental publications.

16. Government Museum, Mathura

During the period under review, the museum acquired and accessioned two stone sculptures; twelve stone tools; two gold coins; three hundred and twenty-one silver and seven hundred and forty-six copper coins.

Among the stone sculptures mention may be made of a Bodhisattva head (22 cm x 15 cm) from Krishna Janma Bhumi, Mallapura, Mathura. This belongs to the Kushan period.

17. Archaeological Museum, Mattancherry Palace

During the period under review, new captions and information boards for the exhibits have been provided. Coins from the reserve collection have been put on display in a wooden show-case. The railings, doors and windows of the museum have been painted and ten new pedestal fans have been provided in the galleries. For the visitors, aquaguard (water purifier) has been provided for drinking water besides replacing the old and damaged coir mats in the galleries. The museum also attended to the preparation of information on the Cochin Rajas which were displayed on boards along with their portraits.

The museum also made provision for a reception/ sale counter and a sign-board in brass letters.

18. Archaeological Museum, Purana Qila

Nearly four hundred and fifty antiquities unearthed from the site during excavation have been enlisted.

Electrification work in the museum including fixing of track-light in Gallery 1 has been completed.

19. Archaeological Museum, Ratnagiri

During the period under review, the display of antiquities in all the four galleries has been completed besides attending to the documentation of displayed antiquities (pl. LXI-LXII). Photo blow ups, charts, maps were provided in the corridor. A booklet on Ratnagiri Museum has been brought out. The basic amenities for the visitors, i.e., water and room coolers have been arranged. A 15 KVA Generator Set has been purchased for installation. Grill-fencing has been provided to the back side of the museum for security, besides arrangement for lighting has been made at the main gate of the museum. Vinyl flooring has been provided to the Gallery 4.

20. Archaeological Museum, Ropar

The excavated material unearthed from Ropar and other two nearby sites Bara and Kotla Nihang

Plate LXI



A



B

Archaeological Museum, Ratnagiri : A, seated Tara; B, Buddha in bhumisparsa-mudra

Plate LXII



A



B

Archaeological Museum, Ratnagiri : A, bronze image of Manjusri; Archaeological Museum, Hazarduari Palace, Murshidabad : B, a view of western drawing room

have been taken over from the Central Antiquities Collection, Purana Qila and classified.

The work of repairing the pedestals and show-cases of the main hall has been done.

21. ARCHAEOLOGICAL MUSEUM, SANCHI

During the year, electrical re-wiring in Gallery 3, information hall, outer verandah and booking counter has been done.

Garden inside the museum has been developed and maintained properly.

Doors and windows in the galleries including office etc. have been repainted with enamel paints.

For security, mercury vapour lamps have been provided on three sides of the museum building.

22. ARCHAEOLOGICAL MUSEUM, SARNATH

The Hon'ble President of India inaugurated two newly arranged galleries in the museum.

During the period under review, the museum also acquired four sculptures from the Patna Circle, belonging to the first-second and fourth-fifth century.

23. BHARAT KALA BHAVAN, VARANASI

During the year under review, the museum acquired following objects *viz.,* Vishnu image in black-stone; silver coin of Akbar bearing the legend 'Rama'; archer-type gold coin of Kanishka, Huvishka, Vasudeva II and late Kushan king; seventy *adi-varaha* coins in silver; two square-type silver coins of Malwa kings; two hundred and fourteen coins received as gifts from the State Museum, Lucknow; sixty-six coins received as donations from Jagdish Mittal, Hyderabad and nine medals of British Government and one medal of Government of India.

Besides, a few pieces of textiles and one hundred and twenty-five first day covers of the Department of Post and Telegraph, have also been acquired through purchase.

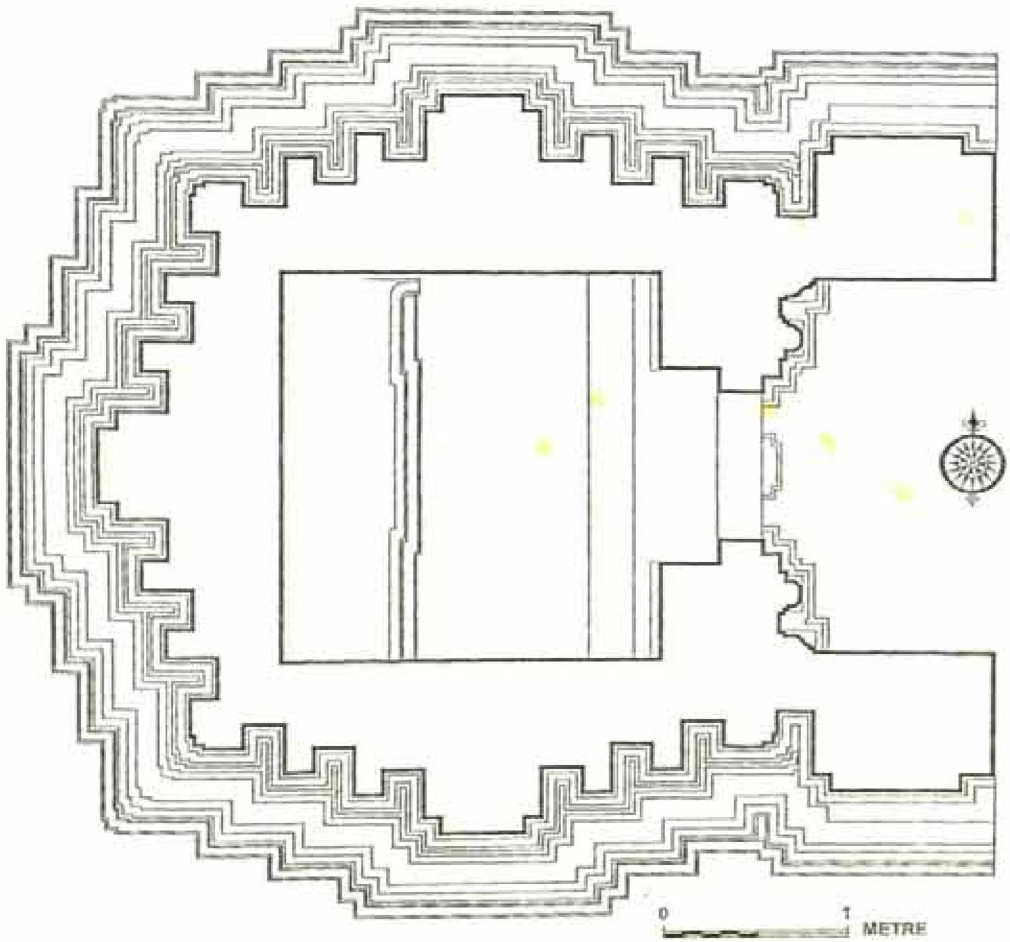
VIII. ARCHITECTURAL SURVEY

TEMPLE SURVEY, NORTHERN REGION

The Temple Survey Project, Northern Region, Bhopal, under P.K. Trivedi assisted by Lakhan Kumar Bhagchandani and Alhad Vyas, continued the work of architectural study of temples of Banswara and Udaipur districts of Rajasthan.

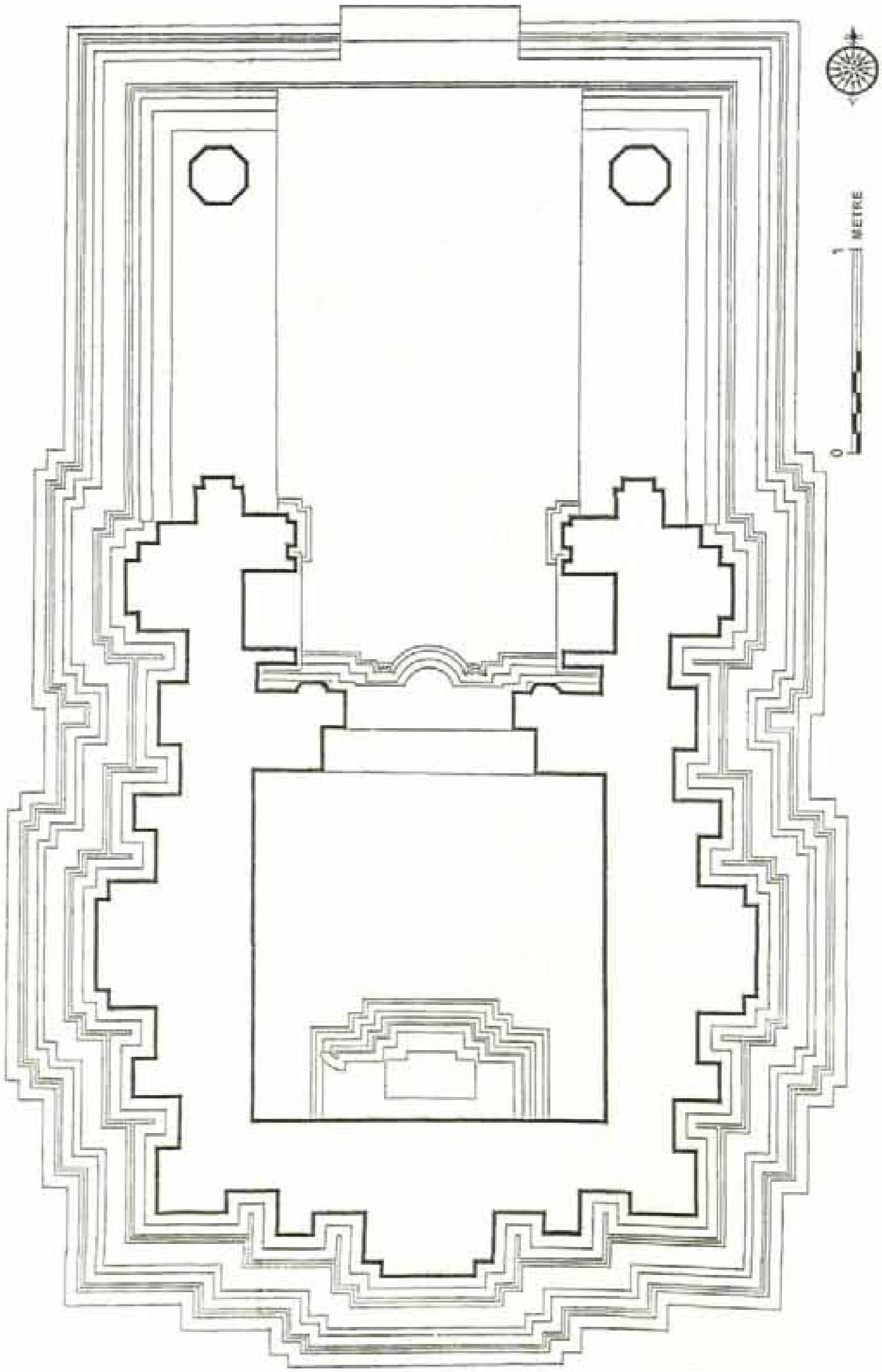
The Parsvanatha Temple, Sun Temple and Lakshminarayana Temple, all located at Talawara in District Banswara and attributable to the Paramaras of Vagada were documented. The Parsvanatha Temple situated in a field nearby Gadadhara Temple on the road, is an easterly oriented shrine consisting of a *nirandhara saptaratha garbhagriha, antarala* and a *gudha-mandapa* preceded by a *mukha-mandapa,* now lost assignable to *circa* eleventh century AD (fig. 16). Its superstructure save for the sanctum has disappeared and is represented only by brick-work. The sanctum enshrines a moulded *simhasana-pithika.* The *uttaranga* of *gudha-mandapa* is plain, but the *lalatabimba* is represented by a seated figurine of Parsvanatha shadowed by a seven-headed serpent. Near the fane lie a *torna* and two Jaina images. The Sun Temple is situated 100 m west of Dwarakadhish Temple on the road leading to Tripurasundari. The dilapidated shrine has preserved a *pancharatha* sanctum, *antarala* and a *pancharatha sabha-mandapa* with lateral transepts. The edifice has undergone several alterations, the *mukha-mandapa* being conspicuous by its absence. The Temple rests on 1.10 m *high jagati.* The shrine externally measures 12.40 m x 12.40 m. Regarding elevation the *pitha* is overlain by neatly cut *khura, kumbha* embellished with a median *manibandha* punctuated with *ardharathas* and niches carved with diamond motif (pl. LXIII). The plain *kalasa* is followed by a pair of *kapotapalis* carved with *chandrasalikas* flanked by *half-chandrasalikas* on *bhadras* while *pratirathas* and *karnas* are punctuated with single *chandrasalikas.* In case of *parsvalindas,* the *pitha* is overlain by *rajasenaka, vedika* and *kakshasana* (now missing). The *jangha* relieved with three large and deep cardinal empty niches is surmounted by a plain broad *pattika* followed by *bharani,* a recess, *khurachhadya, prahara* and the superstructure of brick-work. The square sanctum houses a moulded *simhasana-pithika* over which is installed a loose marble image of Surya attributable to late period. The construction may be assigned to *circa* tenth century. Lakshminarayana Temple facing the north is raised on the southeastern corner of the same platform. It consists of a sanctum showing *bhadra, karna* and *pratiratha* projections with further piano-divisions (fig. 17). The buffer walls *(kapili)* connect it with *praggriva* in front. In elevation the *low pitha* shows buried *bhitta* resting on *kharasila, jadymba, kani,* a deep recess, *kapotapali* punctuated with plain *chandrasalikas.* Over this lies *vedibandha* and a pair

Fig 16



PLAN OF PARSVANATHA TEMPLE, TALWARA, BANSWARA

Fig 17



PLAN OF LAKSHMINARAYANA TEMPLE, TALWARA, BANSWARA

Plate LXIII



Talawara : Sun Temple

Plate LXIV



A



B

Tusa : A, *Saivite Sun Temple and* B, *ceiling showing Kamadeva*

Plate LXV



Jagat: Ambika Temple

of*kapotapalis. The jangha* composed of pilasters is overlain by plain *bharani* and *khurachhadya.* The *phamsana* over the sanctum is represented by five diminishing horizontal tiers *(bhumis),* carved with plain *chandrasalikas.* In the sanctum is enshrined a *triratha simhasana-pithika* on which is kept a black stone image of Lakshminarayana. On the sur architrave is carved a panel of nine planets, whereas *lalatabimba* is represented by a seated figurine of Ganesa. On lower part of *trisakha* door-frame is portrayed Vaishnava *dvarapalas* confirming the affinity of shrine with Vaishnava cult, and the river goddesses Ganga and Yamuna. The *praggriva* rests upon four dwarf pillars erected on *asanapatta.* On one of the frontal dwarf pillars is carved a four-armed standing image of Ganesa. The fane may be assigned to *circa* eleventh century AD.

Saivite-Sun Temple, Tusa, is located about 4km. from Dabok airport in District Udaipur. The east-facing construction has preserved *nirandhara pancharatha* sanctum, *antarala* and *ranga-mandapa* open on three sides, the superstructure being the later work. Regarding elevation it shows a pair of *bhittas, jadyakumbha* punctuated with a half-lotus diamond flanked by half *chandrasalikas* on *bhadras* and single *chandrasalikas* on both faces of the *karnas, kumuda,* plain deep recess *(antarapatra)* and projected plain *pattika* (pl. LXIV A). The *vedibandha* constituted by *khura-kumbha, kalasa,* plain *antarapatra* and *kapotapali* is overlain by *jangha* decorated with a regular *parnapatti* and interlacing *grasakinkanika.* The *jangha* is bedecked with delicately modelled beautiful images *viz.,* two-armed *dikpalas, vyalas,* and seated Surya as *bhadra-devata* on cardinal faces. Above *the jangha* rests a pair *of varandikas* following decorative scheme *of kapotapali* and framing plain *antarapatta* overlain by plain *kantha.* The square *garbhagriha* has retained a flat ceiling carved with lotus-petals around a seedpod and a *grasamukha* on *vikarnas.* The upper architrave *of panchasakha* door-frame is embellished with niched figurines of Brahma, Siva, Vishnu and Surya while *pedyas* reveal river goddesses. The large circular ceiling of *ranga-mandapa* has retained four *devanganas* and a figure of Kamadeva holding an arrow in his right hand and supporting a bow made of a flower stalk on his left (pl. LXIV B). On the stylistic grounds temple may be assigned to the last quarter of *circa* tenth century.

Ambika Temple, Jagat, is situated about 50 km from Udaipur on Semal Road. Alike Mira Temple and Siva Temple, it is made of marble. The temple-complex consists of a double-storeyed pavilion *(valanaka),* temple proper *(mulaprasada)* and a small shrine situated to the north of the latter. The temple proper faces the due south-east-east, consists of a *nirandhara pancharatha garbhagriha, antarala, gudha-mandapa* enclosed with latticed windows in later transepts and *mukha-mandapa* enclosed by a balustrade (pl. LXV). Regarding elevation, the *pitha* is composed of partly buried *bhitta, jadymba, antarapatra, kumuda,* broad projected *grasapatti* overlain by nascent *gajathara.* The lower part of *pitha* is addorsed with niches containing seated figurines of Vaishnavi (S), three-headed goddess (W) and Mahesvari (N), whereas *gudha-mandapa* shows Durga (S) and Kshemankari. The *vedibandha* is elegantly chiselled and shows *khura, kumbha, kalasa,* a recessed fillet, decorated with diamonds framed by pilasters, *kapotapali* with hanging *gagarakas* and punctuated with deeply incised flanged *chandrasalikas* sheltering a *gagaraka* dormer

carved in deeply scooped out *gadha.* The lavishly decorated *jangha* shows handsome *apsarases* carrying flywhisk, *vina,* dagger, bowl, mirror, child, wringling her wet plaits, louts-stalk, yawning *(alasa),* dancing *(nrittyavadana),* bunch of three lotus-buds, seated couple, and two armed, *dikpalas* and *vyalas* (pl. LXVI). The *bhadra rathikas* of sanctum resting on *urdhvapadmachippikas* consist of a pair of circular pillarets, roofed by *chhadya,* surmounted by *gavaksha* and pediments. They harbour images of Mahishamardini. Above *jangha* lies ribbed *bharani, narathara* carved with *vidyadharas, gandharva* and *kinnaras* followed by a pair of *varandikas* framing deep *antarapatta* carved with *kunjaraksha* motif. The curvilinear *sikhara* over the sanctum is of *pancharatha* variety; *madhyalata* reaches above the *skandha* whereas *parsvalatas* are topped by triangular lotus-diamond. The *venukosha* exhibits seven *bhumi-amalakas* suggestive of eight *bhumis.* The spire is surmounted by a large *amalaka, chandrika, amalasarika, chandrika* and *kalasa.* To the southeastern portion of *mulamanjari* is affixed Dhvaja-Purusha wearing a short garment *(kachchha)* and holding a sword and a pot in which rests the base of flag-staff. The *sukanasika* addorsed to the main spire is composed of horizontal tiers bedecked with indented vertical diamonds and full-blown medallions on the ends.

A small shrine at present connected by the *pranala* of the *mulaprasada* is square on plan and exhibits a *pancharatha garbhagriha* and usual components. Clockwise *the jangha* is adorned with images of Indra, Agni, Nirriti, Varuna, Vayu, Kubera, Isana whereas, *bhadra-rathikas* harbour the figures of Durga (S) and Mahishamardini. The upper edge *of jangha* is carved with a band of *tamalapatras* overlain by a pair of *varandikas* framing a plain recess and *kantha* over which rests Pyramidal *sikhara.* Stylistically, both the structures may be assigned to the third quarter *of circa* tenth century.

The Building Survey Project (North) of the Survey, under the direction of Shubhra Pramanik assisted by Sudhir Kumar, Kewal Singh, Saroj Sharma, R.K. Singh, S.K. Sah and Raju took up the survey of British period buildings in Calcutta, West Bengal, with the following objectives: identification and preliminary listing of buildings; documentation of buildings; protection of selected buildings; conservation of protected buildings as also to develop architectural guidelines for modern construction and to notify buildings by the Implement Trust or Development Authority, Calcutta.

Under this project secular buildings, Churches, Hospitals, Cemeteries, etc., were surveyed with a view to ascertaining the settlement pattern during the time of East India Company in Calcutta in the fifteenth century.

One of the earliest surviving historical edifices is St. John Church (AD 1787-1987) (pl. LXVII A) and Job Charnock Mausoleum (pl. LXVII B) located at the crossing of Hasting Street and Council House Street. The architectural remains were found to be built in Georgian style, designed by Lieutenant James Agg, Bengal Engineer, and consecrated on June 24, 1787, comprising an enclosed wall with entrance gateway leading to the structural remains built in chunarstone, raised on a platform with colonnaded verandah with an oblong plan having a three bay nave and galleries, covered with ribs, and vaults. The entire edifice with stone steeple and spire standing on the tower and a clock (pl. LXVII A) is raised over the vestibules divided into three stories; the fourth tier having been omitted, as known from the records, due to the weight of the stone on the treacherous foundation. Inside are a number of five memorials,

Plate LXVI



A



B

Jagat, Ambika Temple : A, decorated mandovara; B, Mahishamardini

Plate LXVII



A



B

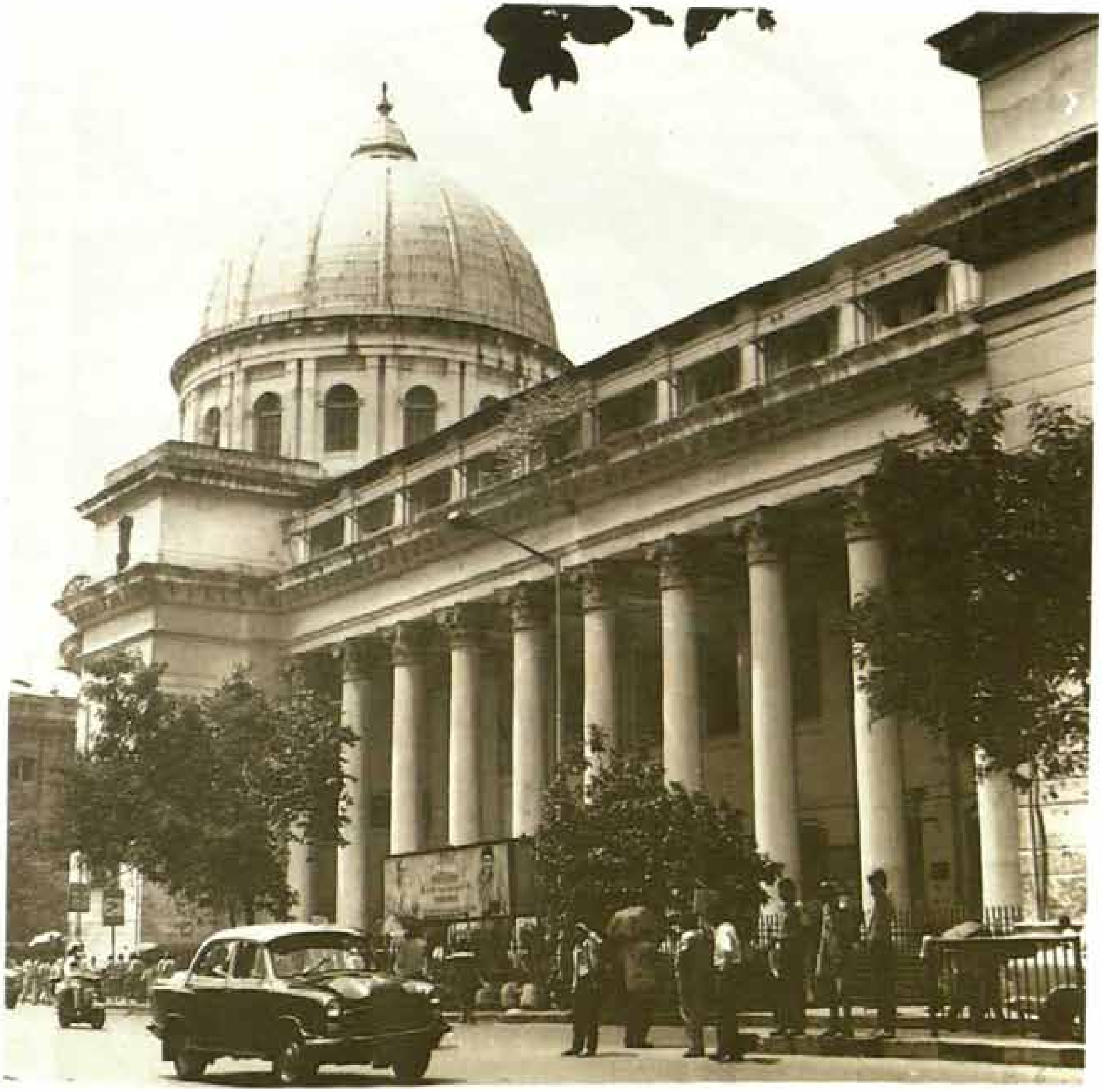
Calcutta : A, *St. Jhon Church;* B, *Tomb of Job Charnok, view from west*

Plate LXVIII



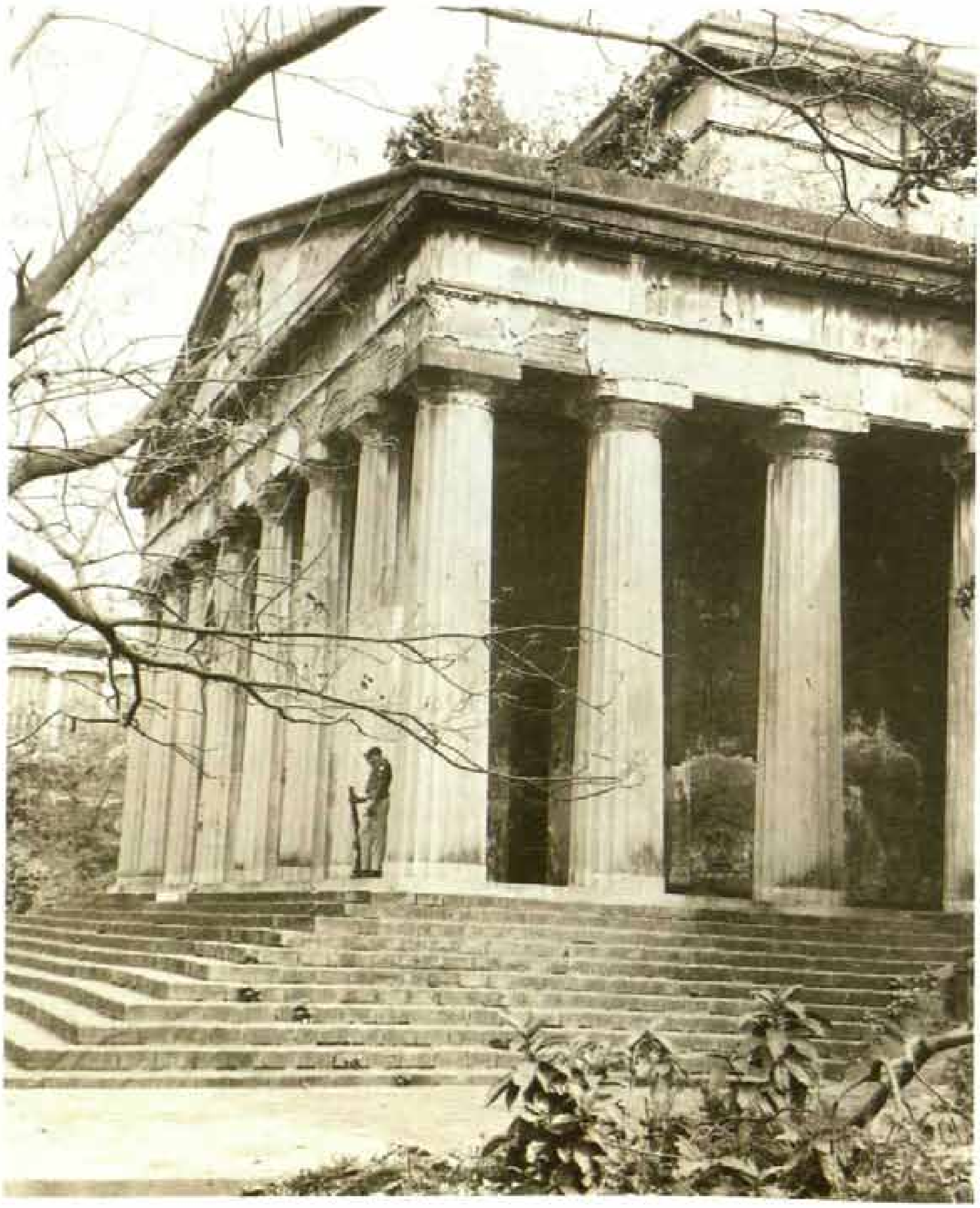
Calcutta : General Post-office, view from south-west

Plate LXIX



Calcutta : General Post-office, view from north-east

Plate LXX



Calcutta : Mint (Taksal), view from south-west

including a marble tablet by John Bacon Jr. to Major James Achillies (AD 1789-1805).

Within the Church-yard lies the 'L' shaped burial ground where lies the tomb of Job Charnock datable to January 10,1695. The plan is octagonal in conception with a double dome surmounted by a serrated parapet and a ponderous kiosk (pl. LXVII B) which is crowned with a shallow cupola and funeral urn built with hard Pallavaram gneiss from the Madras quarry known as 'Charconite'. The faces were cut into horizontal stone to give an appearance of iron strap work. At present it has been white washed. Inside are situated four raised tomb stones.

The inscription is on a slab which reads as: "Charnock a miger, Angulus, at nup in hoc Regro Bengalensi dignissim 'dignissim' Anglorum Agens, Mortalitatis snae exenvias sub hoc mormore depushnit, ut in spe heatore resurreetionis ad cheristi judicis adventum abdormirent. Qui postqnam in salo non. Suo peregrinatus esset div, Reversus est domum saue acternitatis deeimo die January 1692.

Other than the tomb of Job Charnock, nearly forty-three historical tombs have also been surveyed. The Rohilla Cenotaph (1817) commemorates the fourteen officers killed in October, 1794. It has twelve doric columns carrying a frieze enriched with triglyphs, shields and brucrania (Ram's skull).

General Post Office located at the west of Dalhousie Square at the corner of Koila Ghat Street, being a portion of site of Old Fort, Calcutta, dates back to 1868 and designed by Waltes B. Granville, architect to the Government of India. This lofty two-storeyed building, approached by a flight of steps, was dominated by a corner ribbed dome (pl. LXVIII) and punctuated with huge rusticated Schinkelesque pylons, linked by Corinthian colonnades (pl. LXIX). The semicircular south-east angle of the building also faced with the Corinthian columns, leading to a lofty circular hall in which were installed the public letter boxes. A large clock with three dials could be seen below the arched-window.

Another building the Mint (Taksal), situated on the Strand Road about 200 yards north of Howrah Bridge, occupies a large space of ground on the event of road and on the opposite side were located the quarters of Mechanical Engineers. There were two mints, the silver and copper, the former being much larger, designed and constructed by Major W.N. Forbes, R.E. As per the records it took six years to build. The foundation was laid at an average depth of 25 feet below the level of Clive Street. The architecture is Grecian Doric (pl. LXX). The central facade is articulated by a triangular pediment on flat pilasters running upto the length of the house with a symbol at the centre. The tank for Engines of the silver mint was located at the south side of main building and beyond it, were the quarters for Civil Guard, the Police attached to the Mint and Military Guard House

IX. PRESERVATION OF MONUMENTS

MONUMENTS OF NATIONAL IMPORTANCE

AGRA CIRCLE

UTTAR PRADESH

I. AGRA FORT, AGRA, DISTRICT AGRA

Conservation of damaged brackets of the northwestern corner *chhatri* of the Jahangiri Mahal was attended to by replacing the broken and richly ornamented *chhatri* along with the *chhajja*. The watertightening of *chhatri* and stained pointing were carried out. Plastering was done in the cells to the south of the courtyard. The decayed lime-concrete flooring was removed and relaid. To prevent seepage of water, southern quadrangle was replastered and stain pointed.

Five broken marble railings along the open terrace in front of Diwan-i-Khas, each measuring 80x42x6.5 m was replaced with new ones along with carved *muttakas,* keeping in view the original pattern and ornamentation (pl. LXXI).

In Khas Mahal, the conservation of the dislodged northwestern brackets along with the broken *chhajjas* was attended to by dismantling the collapsed portion. The dismantled portion was reconstructed and copper dowels were used for binding them and the broken white marble *chhajja* was replaced with a new one. Special lime-mortar (a gum, *batasha, belgiri* and white marble powder) was used while reconstructing the western and northern walls above the *chhajja* and special lime-mortar mixed with white cement was used for watertightening and pointing of the marble structures.

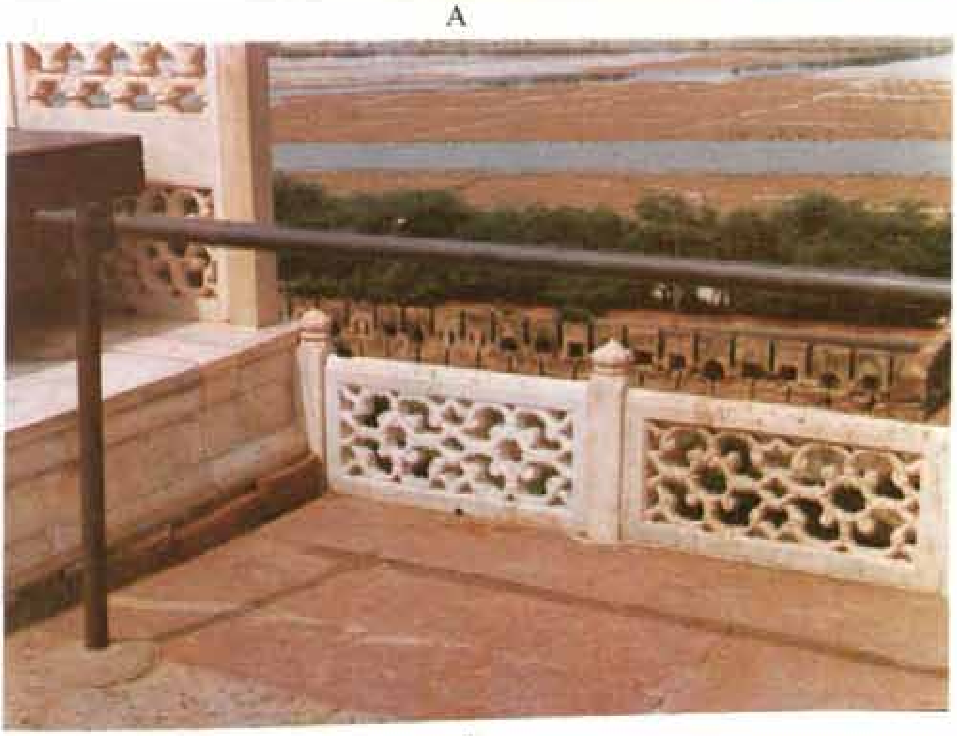
The northern wing of Anguri Bagh was plastered with white lime after pointing of the gaps of the brackets (pl. LXXII).

Substantial repairs were carried out in Mussamman Burj. The verandah, facing the Pachisi court, built of high quality white marble and executed with lavish and intricate inlay ornamentation, developed deep cracks in the lintels and brackets leading almost to a stage of collapse due to the pressure of entire load over the lintels. The development of cracks was attributed to the expansion of iron clamps affected by rusting therein. During an earlier repair of relaying the roof of the verandah, an additional R.S.joist (beam) have been provided longitudinally over the wall on longer sides to divert the load from the lintels. The work was executed in a systematic manner by numbering and documenting the architectural members to be dismantled. Then proper support was provided to

Plate LXXI



A



B

Agra, Agra Fort, Diwan-i-Khas : A, *before and* B, *after conservation of broken jali railing*

Plate LXXII



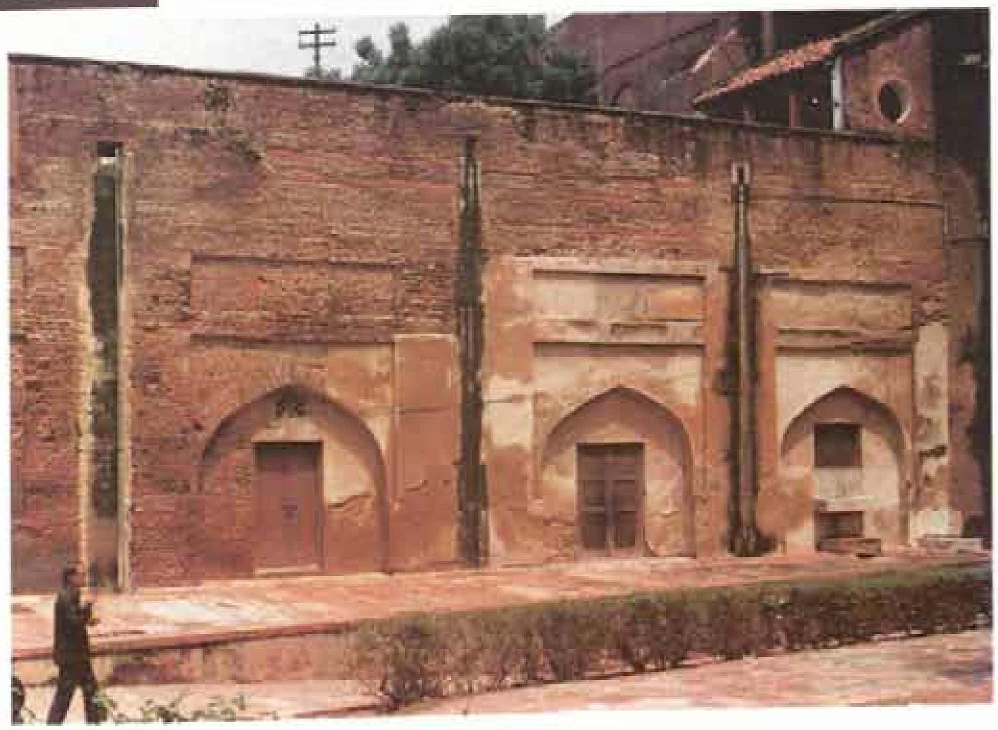
A



B

Agra, Agra Fort, Anguri Bagh : A, before and B, after conservation

Plate LXXIII



A



B

Agra, Agra Fort, Amar Singh Gate : A, *before and* B, *after restoration*

the roof and lintels by raising the thick masonry pillars and wooden propping. The architectural members along the parapet and roof were then dismantled and new R.S.joists were placed along the *farandah* in-between the *chhajja* and cornice for reducing the load of lintels. Special lime-mortar was used for reconstructing the architectural elements in marble. The earlier beam was also pointed with rust proof material as per the original.

Conservation was carried out at Nagina Masjid by replacing the broken white marble railing in front of the Masjid. The railing with floral patterns was replaced with a new one along with carved *muttakas.* The broken white marble *chhajja* on the eastern and southern faces was also replaced.

The underpinning, pointing and plastering of decayed walls of cells at Shivaji Building were attended to.

Along the ramp leading to the interior of the fort from Amar Singh Gate, the retaining walls were plastered with lime (pl. LXXIII). Decayed grooved stones along the floor of the ramp have been replaced by new ones.

2. ITMAD-UD-DAULA'S TOMB, AGRA, DISTRICT AGRA

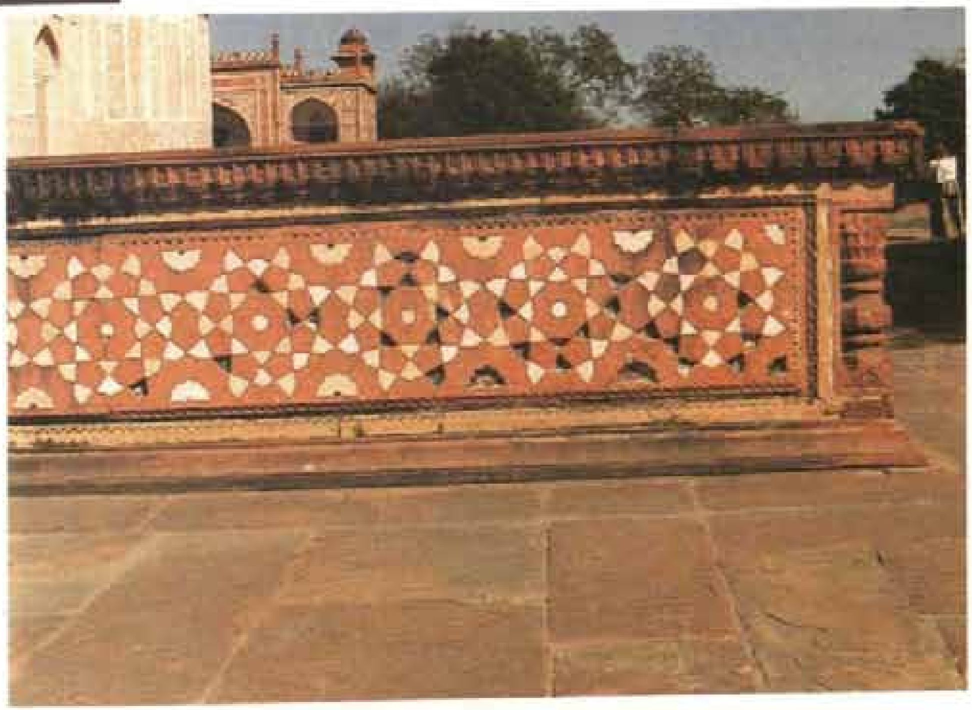
The feeing stones of the square platform of the tomb were attended to by restoring the missing inlay stones on all the four sides (pl. LXXIV). The inlay work of red sandstone veneering at the east and central chambers of the Baradari on the river side was also replaced.

The tilted southern compound-wall near the south-east and south-west *burji* was attended to by dismantling and reconstructing the same matching the original wall.

3. GROUP OF MONUMENTS, FATEHPUR SIKRI, DISTRICT AGRA

In Jama Masjid or Dargah-complex, the basement cells were extensively repaired by attending to the works of underpinning of walls and ceilings with course rubble masonry work and pointing of joints to the east and western sides of Buland Darwaza. The missing wall towards the west of the jumping well *(jhalla)* was restored with course rubble masonry and the joints were pointed thereof. The arcaded openings for the basement cells on the east, west and southern sides towards the north of the jumping well *(jhalla)* were closed by raising the course rubble masonry wall provided with M.S. grill doors therein. In the ground floor of this complex, the cells with the fore-running verandah *(dalans)* all around the vast courtyard were repaired by attending to the works of underpinning of the cavities and replastering the damaged areas of walls and ceilings. In Zanana Rauza, the flooring work has been done by laying 65 mm thick red sandstone blocks after dismantling the old and decayed floor at the main entrance hall and the northern side long hall. Stone flooring has been restored on the tree platform towards the north of Chishti's tomb. The flooring was also secured by pointing the joints with suitable mortar. The waste and dismantled huge stones were removed and stacked at a safer place. The *pardah* (screen-walls) of the monument were repaired by fixing the fine ground and polished red sandstone dab *and farandah* blocks of different gauges (e.g., 50 mm, 75mm, etc.), length and breadth as per requirement along with 55 cm long *muttaka* stones of 15 cm thickness carved with floral patterns and straight mouldings at the wall corners. The inlay restoration has been carried out at Badshahi Darwaza (pl. LXXV).

Plate LXXIV



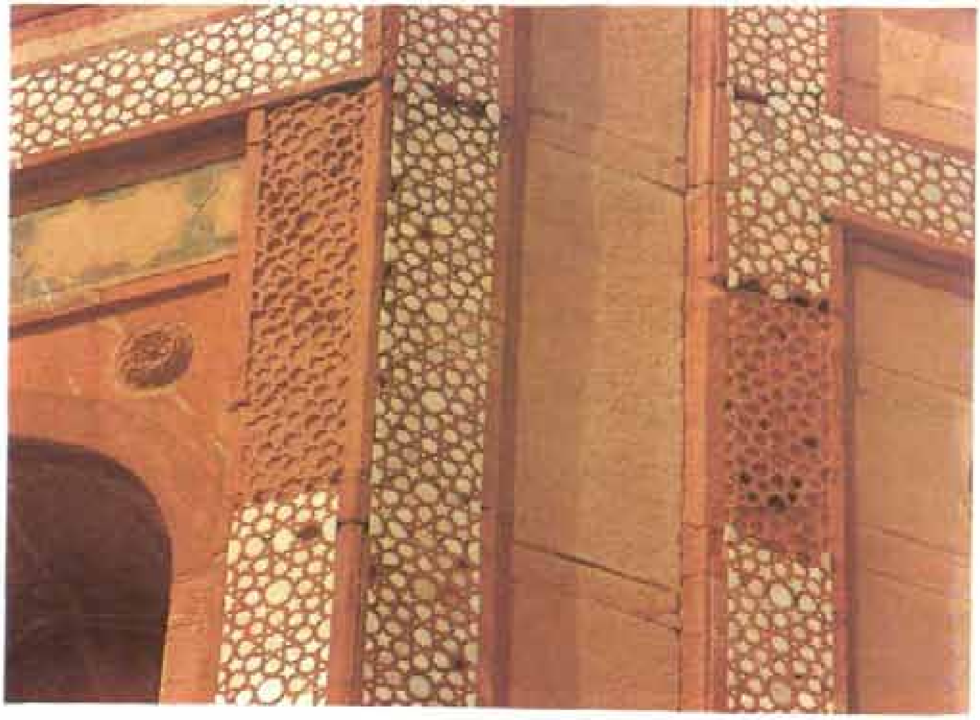
A



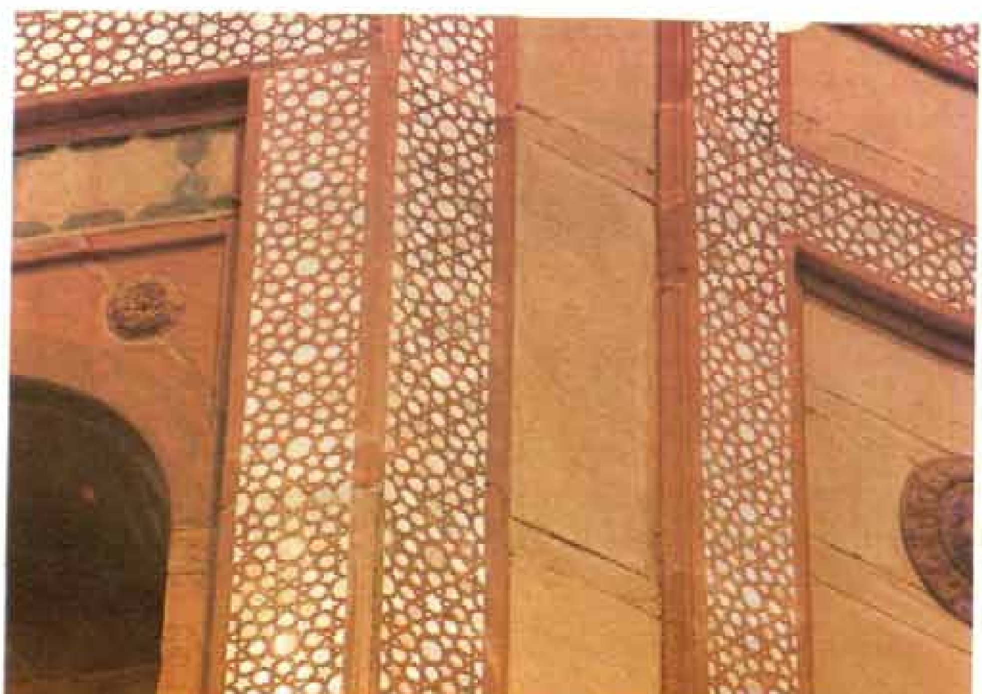
B

Agra,Itmad-ud-Daula : A, *before and* B, *after restoration of the inlay stones*

Plate LXXV



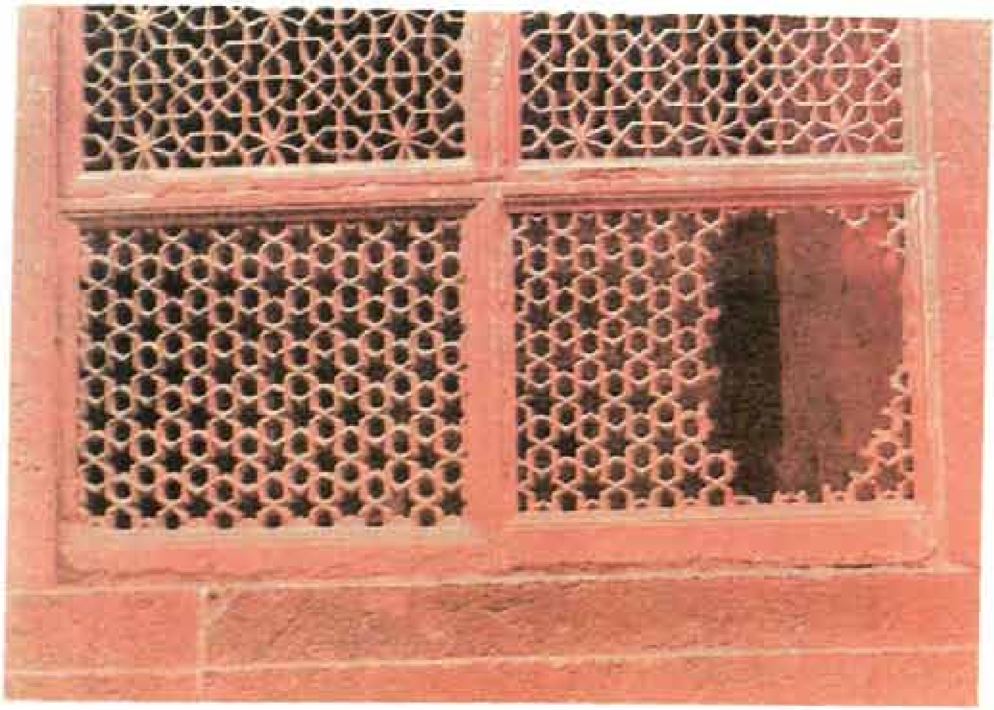
A



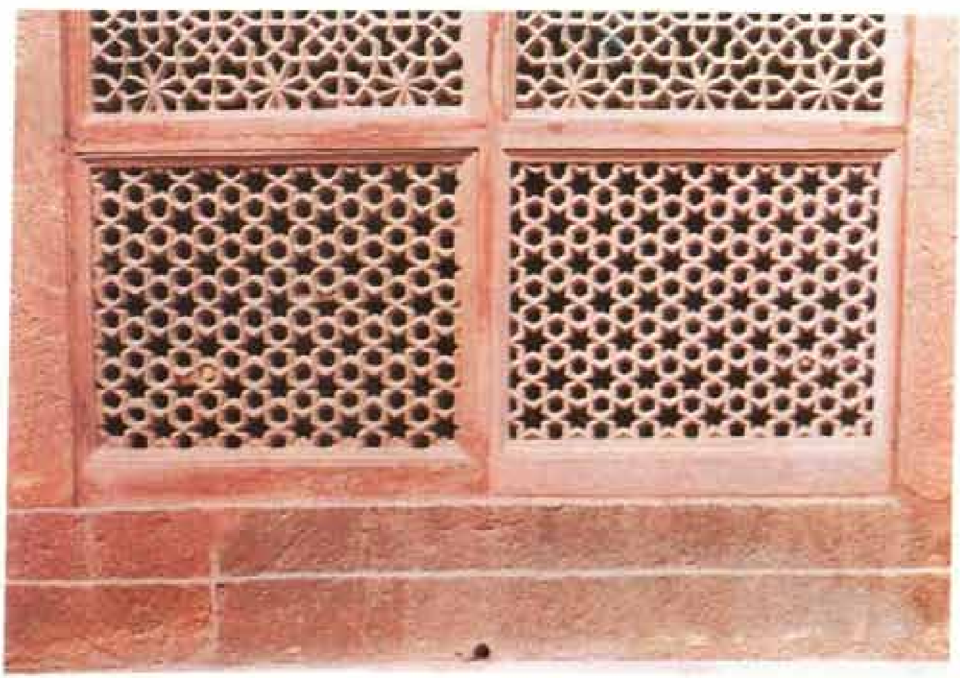
B

Agra, Fatehpur Sikri, Badshahi Darwaza : A, *before and* B, *after restoration of inlay work*

Plate LXXVI



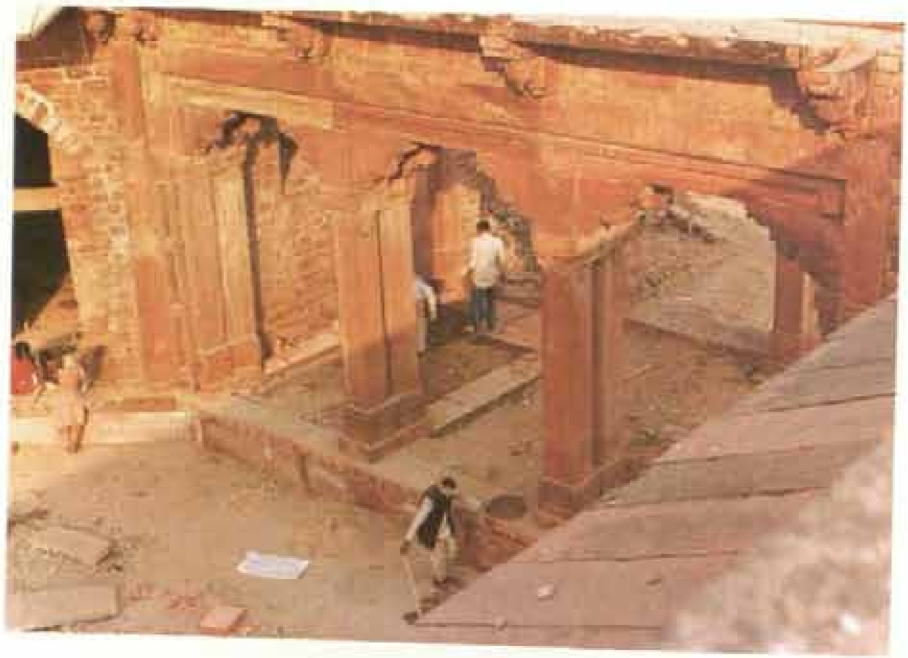
A



B

Agra, Fatehpur Sikri, Tomb of Islam Khan, Jama Masjid-complex : A, *before and* B, *after restoration of jali-screen*

Plate LXXVII



A



B

Agra, Fatehpur Sikri, Langar Khana : A, *before and* B, *after extensive repairs*

Plate LXXVIII



A



B

Agra, Ram Bagh : A, *before and* B, *after conservation of the paved pathways*

In the tomb of Islam Khan, a *jali*-screen 85 mm thick, fashioned out of red sandstone was fixed after safely dismantling the damaged portion (pl. LXXVI). Langar Khana located at the southeastern end of Jama Masjid near Buland Darwaza, is extensively repaired by providing and fixing the carved *pandar dasa* stones, *farandah* stones, *chhajja* stones and other veneering stones at places wherever missing and the broken and damaged ones were also replaced with new ones. The missing stone masonry wall was restored and the structure was secured by pointing the joints. The repairs also included laying of 65 mm thick red sandstone flooring upon a base of lime-concrete (pl. LXXVII).

In Sangtarash Masjid (stone cutter's mosque), the dead and the decayed roof concrete was treated with water proofing material after picking up loose surface of the terrace. A collapsed coursed rubble masonry stone-wall on the northern side of the mosque was restored. Sunken and missing stone flooring has been repaired by providing new flooring stones. Missing and broken *chhajja-stones* of the entrance room were replaced by new ones. The *kharanja* pathway leading to the monument was raised and provided with stone flooring.

In Haram Sara of Royal-complex, the old and decayed red sandstone flooring was repaired by laying 65mm thick new stones on the north and the south of Maryam 's palace.

4. RAM BAGH, AGRA, DISTRICT AGRA

The dilapidated red sandstone paved pathways of the upper terrace and the missing flag-stones at some portion of pathways were replaced with new concrete (pl. LXXVIII), wherever necessary.

The compound-wall on all the four sides was repaired by removing the vegetation and attending to the works of underpinning, plastering and recessed pointing wherever required. At the main entrance gate, the damaged MS gate was replaced by new one and missing roof-slabs were provided with lime-concrete.

5. TAJ MAHAL, AGRA, DISTRICT AGRA

The decayed red sandstone panels of the facade and missing inlay pieces of the main entrance gate of Taj Mahal were replaced with new stone panels reproducing the same embossed floral design and new inlay pieces (pl. LXXIX - LXXX). A broken *stone-chhajja* in the front portion was replaced with a new *chhajja.*

At the south-west, decayed and sunken pathway stones in Saheli Burj, haye been replaced and reset besides pointing the open joints of the *lakhauri* brick-wall and stone flooring. Decayed plaster and concrete of roof have been relaid and the broken stone *chhajja,* and missing marble pinnacles of the turrets have also been provided.

Conservation of the missing inlaid bars of railing and marble-screen of the main mausoleum was attended to by providing new ones. A wooden railing with aluminium grill has been placed around the marble-screen of cenotaph chamber to prevent it from the direct touch of the visitors.

Conservation of decayed water channels of Khan-i-Alam Bagh was attended to by underpinning, pointing and replacing the decayed plaster. In addition, MS grill railing over a dwarf wall has been provided along the road leading to the Bagh.

At the Gaushala, walls of the northern cells have been provided with fresh plastering; floors are

Plate LXXIX



A



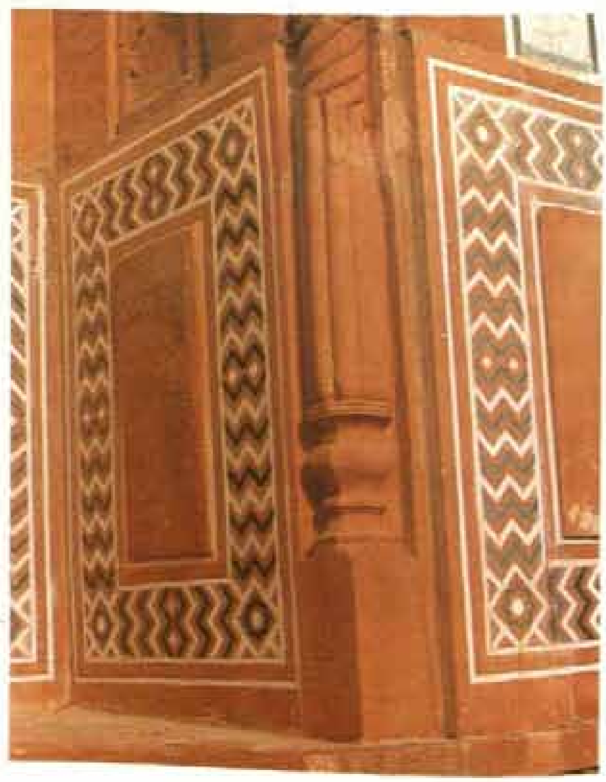
B

Agra, Taj Mahal, main entrance : A, *before and* B, *after conservation*

Plate LXXX



A



B

Agra, Taj Mahal, main entrance : A, *before and* B, *after repairs*

provided with fresh lime-concrete, bulged and collapsed *lakhauri* brick wa41 was reconstructed and underpinned. The bulged, broken and missing red sandstone *chhajja* on the southern side was replaced with a new *chhajja*.

6. AKBAR'S TOMB, SIKANDARA, DISTRICT AGRA

The repairs have been carried out by watertightening the roof of marble store and stained pointing the joints of the wall faces and *chhajjas*. The work is in progress. The restoration of inlay work has been attended to at the main gate. The wall surface of the rooms has been repaired by plastering and the bulged *chhajja-stones of chhatri* over the main gate were refixed as per the original. The work of pointing was attended to at the corner minarets and *chhatri* over the main gate.

7. SUN TEMPLE, KATARMAL, DISTRICT ALMORA

The collapsed *sikhara* of the temple has been partly repaired by laying the dressed stones at top matching the original.

8. GROUP OF TEMPLES, JAGESHVAR, PHULAI GUNTH, DISTRICT ALMORA

The temple of Jagannatha, along with two small shrines and part of the stone floor were damaged due to the collapse of an old tree. Therefore, the repairs were carried out by replacing the damaged members of the wooden canopy as per the original and resetting of copper sheets. The resetting and replacement of damaged architectural members of the other shrines have also been done. The damaged stone floor was repaired by replacing the floor stones by new ones. The damaged portion of the stone masonry was restored with stone masonry. The restoration of the old and decayed Bhogasala has also been completed. Some decayed and worn-out stone members of minor shrines have also been suitably replaced. The sunken and decayed floors around the shrines have also been restored by replacing the flooring stones by new ones as per requirement.

9. IKHLAS KHAN'S TOMB, BUDAUN, DISTRICT BADAUN

The outer surface of the dome, which had become uneven due to ravages of time and sporadic repairs, was deplastered. The vegetational growth was completely uprooted. Thereafter, the surface was repaired by underpinning with *lakhauri* brick-work and the surface was made even by applying lime-mortar. Further, it was plastered with special lime-mortar. Besides, the floor of the outer verandah was partly repaired by laying lime-concrete.

10. RUDRANATHA TEMPLE, GOPESHVAR, DISTRICT CHAMOLI

The sunken floor of the temple was repaired by picking up stones and laying RCC slab and stone flooring as per the original pattern. The decayed wooden door of the main shrine has been replaced by new one following the existing pattern. The restoration of missing stone masonry wall around the temple along with the approach steps has been completed besides attending simultaneously to the work of pointing the joints and watertightening.

11. BALAPIR TOMB, KANNAUJ, DISTRICT FARRUKHABAD

During the period under review, the dome, parapet, corner *chhatris* and walls have been repaired by attending to the works of plastering, removal of vegetation and filling of cracks and voids. The repairs of flooring at the northern side of mausoleum was carried out by providing the stone flooring with a concrete base and the joints were pointed.

12. MOHAMMAD MEHANDI KHAN'S TOMB, KANNAUJ, DISTRICT FARRUKHABAD

The repairs were carried out by attending to the works of plastering of the dome after complete removal of vegetation and decayed plaster, filling of cracks and voids and pointing the joints of corner kiosks, providing floor stones with concrete-base at places where these were found missing.

13. ANCIENT SITE, SANKISA, DISTRICT FARRUKHABAD

The development of the surroundings and environment was done by plantation and gardening.

14. R.C.CEMETERY, SARDHANA, DISTRICT MEERUT

A collapsed portion of the compound-wall was restored. The repairs were carried out by attending to the plaster work and underpinning of some decayed graves. Lime-concrete was laid on floor around the decayed graves to prevent dampness.

AURANGABAD CIRCLE

MAHARASHTRA

15. AJANTA CAVES, DISTRICT AURANGABAD

Drinking water facility has been provided to the visitors by installing water coolers.

16. AURANGABAD CAVES, DISTRICT AURANGABAD

l ne missing rock beams have been restored in RCC, finished with cement-plaster matching the original as evidenced from the Cave 4 and provided with parapet wall in ashlar masonry, for the safety of visitors.

17. CHANGDEV TEMPLE, DISTRICT AURANGABAD

The decayed top portion of the roof of the main temple has been removed and the work of watertightening has been carried out to avoid further leakage.

18. ELLORA CAVES, DISTRICT AURANGABAD

The approach road from Caves 10 to 32 was completed by asphalting concrete and widening of north side of the present road. The parking area in front of the Caves 10, 12, 16 and 32 was also completed by asphalting concrete, etc. The area in front of Caves 1 and 8 has been laid with plain cement concrete to avoid dust.

Teak-wood door-frame and shutters with welded mesh were fixed to avoid entry of bats and stop vandalism of paintings inside the caves.

19. MALIK AMBAR TOMB, DISTRICT AURANGABAD

The bulged and out-of- plumb compound-wall has been dismantled and reconstructed in C.R. masonry around the tomb (pl. LXXXI-LXXXII).

20. PITALKHORA CAVES, DISTRICT AURANGABAD

Repairs to the sunken flight of steps were restored as per the original, for easy movement of visitors.

21. THATTE NAHAR, DISTRICT AURANGABAD

The repairs to the damaged pipe-line including replacement of new pipes was carried out.

22. GOND RAJA'S TOMB, CHANDRAPUR

The damaged and sunken flooring inside the structure was removed and provided with plain cement concrete as per the adjacent one.

23. MARKANDA DEVA TEMPLE, DISTRICT GADCHIROLI

The fallen architectural members to the southern side of the entrance of the main shrine were refixed to their original place and stone pavement was provided around the temple-complex.

Plate LXXXI



A



B

Aurangabad, Malik Ambar's Tomb, compound-wall : A, *before and* B, *during repairs*

Plate LXXXII



Aurangabad, Malik Ambar's Tomb, compound-wall : after repairs

24. ANCIENT SITE, MANSAR, DISTRICT NAGPUR

The excavated site of Mansar has been provided with barbed-wire fencing and M.S. Angles in cement concrete.

25. SHIVNERI FORT, JUNNAR, DISTRICT PUNE

The reconstruction work of fallen portion of entrance gate (first and second) of the fort, was carried out in C.R. masonry. The missing parapet was repaired by providing ashlar masonry.

26. BASSEIN FORT, DISTRICT THANE

The work of plastering and white washing, matching the original, on the inner wall of Gonsalvis Garcia Church inside the fort has been carried out after removing the decayed concrete.

27. SIVA TEMPLE, AMBERNATH, DISTRICT THANE

The roof of the main temple and *sikhara* has been watertightened by pitching, pointing, wherever necessary, to stop further leakage and detonation.

BANGALORE CIRCLE

KARNATAKA

28. TIPU SULTAN'S PALACE, BANGALORE, DISTRICT BANGALORE

Water proof cement paint has been applied on the walls of the palace. The wooden members were treated with wood preservatives. The main entrance pathway leading to the palace has been paved with floral designed tiles over sand-bed.

29. FORT, DEVANAHALLI, DISTRICT BANGALORE

The fallen wall of the bastion on the southern side has been reconstructed by using original members and consolidating the core.

30. ANANTASAYANA TEMPLE, ANANTASAYANAGUDI, DISTRICT BELLARY

The collapsed architectural members of eastern *mahadvara* were collected after careful earthwork. The damaged and out-of-plumb *mahadvara* was carefully dismantled and original members were systematically stacked for reconstruction.

31. HAZARARAMA TEMPLE, KAMALAPURA, DISTRICT BELLARY

The protected area on the northern and eastern sides were fenced by providing crimped wire mesh with L angle frame over a dwarf wall provided with stone veneering matching the Vijayanagara architecture.

32. KRISHNA TEMPLE, KRISHNAPURA, DISTRICT BELLARY

The modern buttress supports in masonry provided to the broken beams of the cloister *mantapa* were carefully dismantled and reconstructed after replacing the broken beams and ceiling slabs. The roof was watertightened by providing weather proof course in lime and brick jelly. The modern masonry supports provided to the Pakashala were removed. The out-of- plumb and sunken Pakashala was dismantled and reconstructed after strengthening the foundation.

33. ACHUTARAYA TEMPLE, VENKATAPURA, DISTRICT BELLARY

The ugly looking masonry props supporting the walls of the south-east *prakara* have been removed and the disturbed *prakara*-wall has been reconstructed as per the original (pl. LXXXIII).

34. VITTHALA TEMPLE, VENKATAPURA, DISTRICT BELLARY

The disturbed ante-chamber of the main shrine has been dismantled after removing the ugly looking

Plate LXXXIII



A



B

Venkatapuram, Achutaraya Temple : A, before and B, after repairs of prakara-wall

Plate LXXXIV



pl. LXXXIV A



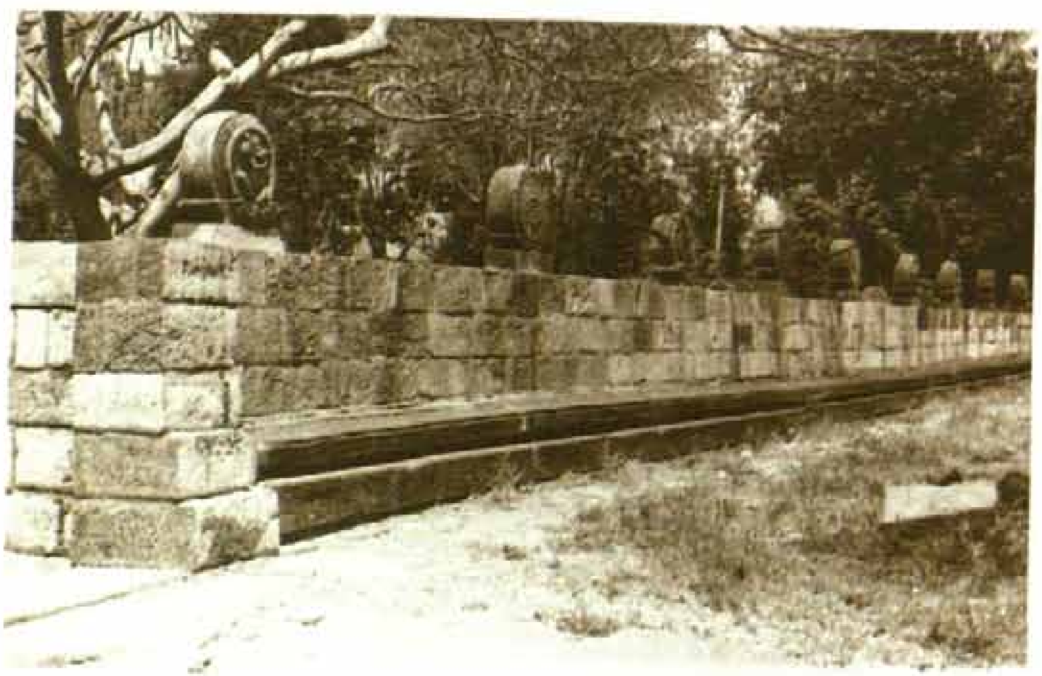
pl. LXXXIV B

Venkatapuram, Vitthala Temple, stone chariot : A, *before and* B, *after conservation*

Plate LXXXV



A



B

Amrutapura, Amrutesvara Temple, prakara-wall: A, *before and* B, *after repairs*

masonry supports given to the broken beams. The same has been reconstructed after strengthening the broken beams. The disturbed floor was relaid over a bed of 20 cm thick sand. The damaged *dvarapalas* in stucco was mended as per the original. The hair cracks of the stone chariot were grouted using suitable epoxy mixtures. The roof of the chariot was also watertightened (pl. LXXXIV).

35. AMRUTESVARA TEMPLE, AMRUTAPURA, DISTRICT CHIKAMAGALUR

The prakara-wall of the temple on the north-east was dismantled and reconstructed as per the original over a strong foundation of lime-concrete (pl. LXXXV). The ugly support of the roof was removed and the *adhishthana* portion has been reset after bridging the gaps (pl. LXXXVI).

36. FORT, MADIKERE, DISTRICT COORG

The dead plaster over the brick walls has been removed and replastered as per the original.

37. HARIHARESVARA TEMPLE, HARIHARA, DISTRICT DAVANGERE

The roof of the main shrine has been watertightened by providing a layer of brick-jelly in lime-concrete and a waterproof course has been provided above. The damaged stucco figures of the main *sikhara* have been mended as per the original. The eastern and northern entrances were provided with collapsible gates.

38. ISVARA TEMPLE, ARASIKERE, DISTRICT HASSAN

Fencing in crimped mesh was provided on the eastern side.

39. HOYSALESVARA TEMPLE, ARASIKERE, DISTRICT HASSAN

The dead plaster over the leaky roof of the main shrine has been scraped out and the roof has been watertightened by providing a thick plaster in combination mortar and with waterproof cement compound.

40. FORT AND DUNGEON, MANJARABAD, DISTRICT HASSAN

The wide joints of the fort-wall were grouted. The narrow steps leading to the monument were widened and missing portion of the retaining-wall on either side of the first entrance has been provided with stone-blocks.

41. LAKSHMINARASIMHA TEMPLE, NUGGEHALLI, DISTRICT HASSAN

The uneven sunken flooring of the temple has . been relaid over a cement-concrete bed. The leaky roof of the *mantapa* has been watertightened by laying brick-jelly concrete and plastering the surface in waterproof cement compound. The damaged stucco figures have been mended and suitable colour has been applied matching the original.

42. SOMESVARA TEMPLE, KOLAR, DISTRICT KOLAR

The out-of-plumb and disturbed cloister *mantapa* on the northern side has been carefully dismantled and reconstructed as per the original by strengthening the foundation by providing cement concrete. The damaged stucco figures of the main *gopura* have been mended as per the original.

43. DARIYA DAULAT BAGH, SRIRANGAPATNA, DISTRICT MANDYA

The leaky roof of the palace has been watertightened by providing a fresh layer of mortar. The damaged G.I sheets of the roof have been replaced with fresh sheets. Crimped wire mesh fencing has been provided on the western side of the protected area. The parapets and external surface of the outer walls have been colour washed, suitably. The

Plate LXXXVI



A



B

Amrutapura, Amrutesvara Temple, adhishthana portion : A, *before and;* B, *after conservation*

damaged AC sheets of *nagarkhana* have been replaced.

44. GUMBAZ, SRIRANGAPATNA, DISTRICT MANDYA

The walls and Minars of the Gumbaz, mosque and Khan Khana have been given a fresh colour in waterproof cement paint. The plaster of the walls wherever damaged has been replastered. The doors, windows and rafters have been painted by applying wood preservatives.

45. THOMAS INMAN'S DUNGEON, SRIRANGAPATNA, DISTRICT MANDYA

The damaged floor of the structure has been relaid in lime-concrete and the surface has been plastered. The decayed plaster of the walls have been removed and replastered in lime-mortar as per the original. The damaged walls of the dungeon have been restored. M.S. grill gate has been provided at the main entrance.

46. SRIKANTESHVARA TEMPLE, NANJANGUD, DISTRICT MYSORE

The dead plaster over the leaky roof of the *mukha-mandapa* has been removed and fresh weather proof course has been laid to prevent leakage of water. The wooden members of the main *gopura* have been suitably colour washed. Fibre glass sheets are fixed to the damaged sky lights.

47. KIRTTINARAYANA TEMPLE, TALKAD, DISTRICT MYSORE

Sand dunes covering the ancient temple is being removed systematically to expose the buried structures (pl. LXXXVII).

48. GOURISHVARA TEMPLE, YELANDUR, DISTRICT MYSORE

An enclosure wall has been constructed on the southern side in size stone masonry.

49. TRIPURANTESVARA TEMPLE, BELLIGAVI, DISTRICT SHIMOGA

The houses acquired within the protected area have been removed and the area has been fenced with barbed-wire by providing M.S. angles.

50. ANANTAPADMANABHA TEMPLE, KARKALA, DISTRICT SOUTH KANARA

Stone pavement was provided around the temple over a sand-bed. Recess pointing was done in cement-mortar.

51. CHOWTAR'S PALACE, MOODBIDRI, DISTRICT SOUTH KANARA

The broken and damaged wooden members of the sloppy roof of the inner corridor were replaced with fresh ones.

BHOPAL CIRCLE

MADHYA PRADESH

52. FORT LANJI, DISTRICT BALAGHAT

Repairs and restoration work of damaged portion of the fort-wall in lime-mortar has been taken up and the same is in progress.

53. FORT ATER, DISTRICT BHIND

Excavation and removal of *malwa* of fallen portions after sorting out useful materials and stacking the same for reuse in conservation of the gateway-complex of the fort are in progress. Repairs at the first and the main gate are also in progress besides underpinning and recess pointing of the damaged walls.

54. DEVI JAGADAMBI TEMPLE, KHAJURAHO, DISTRICT CHHATARPUR

Excavation of foundation trenches to erect stone masonry dwarf wall with M.S. grill to enclose the

Plate LXXXVII



A



B

Talkad, Kirttinarayana Temple : A, *before and* B, *after removing sand-dunes*

additional area behind Devi Jagadambi Temple, beyond canal for safety of the temple and to check encroachments, is in progress.

55. EASTERN AND SOUTHERN GROUP OF TEMPLES, KHAJURAHO, DISTRICT CHHATARPUR

Watertightening of the open joints of the temples under these group is in progress to check leakage of water during rainy season.

56. KANDARIA MAHADEVA TEMPLE, KHAJURAHO, DISTRICT CHHATARPUR

Replacement of old worn-out G.I barbed-wire fencing on angle iron posts with stone masonry dwarf wall mounted with M.S. grill has been completed. Watertightening of temple by sealing open vertical joints to check the ingress of rain-water is in progress.

57. LAKSHMANA TEMPLE, KHAJURAHO, DISTRICT CHHATARPUR

Watertightening of Lakshmana Temple by sealing the open joints to check the inflow of rain-water is in progress.

58. WESTERN GROUP OF TEMPLES, KHAJURAHO, DISTRICT CHHATARPUR

Excavation and laying of foundation for construction of stone masonry dwarf wall for replacement of existing G.I. barbed-wire fencing on angle iron posts with stone masonry dwarf wall mounted with M.S. grill to strengthen the security on southern side, are in progress.

59. BEER SINGH PALACE, DATIA, DISTRICT DATIA

The work of patch plaster, relaying of damaged lime-concrete flooring and other miscellaneous repairs have been completed.

60. SLDDHESHVARA TEMPLE, NEMAWAR, DISTRICT DEWAS

To check encroachments, the area was enclosed with G.I barbed-wire fencing on R.C.C. posts.

61. BUDDHIST CAVES, BAGH, DISTRICT DHAR

Dismantling of decayed and damaged rock-cut cells and pillars of Cave 2 and their reconstruction in R.C.C. matching the original, is in progress.

62. DARIYA KHAN'S MOSQUE, MANDU, DISTRICT DHAR

Extraction of limestone slabs from leased quarry at Zeerabad and transportation of the same to Mandu for use in flooring have been completed. Replacement of old, decayed, damaged and sunken stone flooring with fresh fine chisel-dressed limestone flooring has also been completed.

63. GADASHAH SHOP, MANDU, DISTRICT DHAR

Excavation of settled debris of fallen structures, sorting of useful stones and stacking the same for reuse in conservation of monument and throwing the waste out of the town by mechanical transport, are in progress. The restoration of damaged walls, etc. is also in progress.

64. JAHAZ MAHAL, MANDU, DISTRICT DHAR

Restoration of damaged and missing rear arches of Jahaz Mahal in R.R stone masonry in *Mme-surkhi* and sand-mortar has been completed. Restoration of damaged and missing *chhajjas* with fresh fine chisel dressed limestone *chhajjas* as per the original, is also in progress.

65. LAL BUNGLOW, MANDU, DISTRICT DHAR

Excavation and removal of settled debris of fallen portions and disposal of the same away from the monument, after sorting out useful stones for reuse in

conservation of the monument are in progress. The work of relaying decayed lime-concrete terrace, flooring, etc., has also been done.

66. ROOPMATI PAVILION, MANDU, DISTRICT DHAR

Extraction of limestone slabs from leased Government quarry at Zeerabad and dressing of the same for undertaking restoration of damaged dome are in progress. Dismantling of the half dome to restore it in plumb and alignment has been taken up.

67. WATER PALACE, SADALPUR, DISTRICT DHAR

Procurement and fine chiselling of limestone slabs and restoration of damaged and missing underground terracotta pipes and floor, are in progress.

68. GROUP OF TEMPLES, KADWAHA, DISTRICT GUNA

Enclosing the area of Temples 9, 10, 11 and 12 with G.I. barbed-wire fencing on angle iron posts for safety of temples and to check encroachments, has been completed. The work of enclosing the area of other groups with G.I. barbed-wire fencing on angle iron post and repairs to dry stone masonry wall of Garhi in plumb and alignment is in progress.

69. MOHAMMAD GHAUS TOMB AND TANSEN COMPLEX, GWALIOR, DISTRICT GWALIOR

The work relating to development of garden on the rear side of the complex is in progress. Replacement of damaged and missing *jalis* with new ones of the original geometric pattern at the mosque, has been completed. Replastering of the main dome of Mohammad Ghaus Tomb is being taken up. Replacement of facing, and *dasa* stones, replastering of walls, terracing of roof, replacement of damaged stone *jalis* and *chhajja-stones,* etc. of Bahu-ka-Hajjara and Baradari are also in progress. The pathway inside Mohammad Ghaus-complex has been spread with red *murrum* brought from Datia to enhance the get up of the monuments. Construction of stone masonry dwarf wall mounted with M.S. grill in forecourt of Mohammad Ghaus-complex to check the unauthorized parking of vehicles and encroachment is also in progress;

70. VISHNU VARAHA TEMPLE, KARITALAI, DISTRICT JABALPUR

During the period under review, excavation and laying of foundation have been completed. Construction of stone masonry dwarf wall mounted with M.S. grill for safety of the monument and to check the encroachments is in progress.

71. COMPOUND WALL, SCULPTURE SHED, UN, DISTRICT KHARGONE

Excavation and laying of concrete foundation have been completed. The work of construction of stone masonry dwarf wall is in progress.

72. GROUP OF TEMPLES, BATESHVAR, DISTRICT MORENA

The eastern wall of *matha* has been restored. The restoration of *sikhara* of *mandapika* shrines with available members is also in progress. Enclosing the area with G.I. barbed-wire fencing on angle iron posts to check encroachment, is also in progress.

73. GARHI PADAWALI, DISTRICT MORENA

The removal of dumped and settled debris, stacked in the courtyard, has been completed. Clearing of the main structures, staircase (*sopana*) of the temple, which was blocked, has been completed. The area around the Garhi was cleared of vegetational growth. The missing and damaged stone-slabs of the newly exposed staircase have been restored. The work of repairs to the Dharmashala has also been completed.

74. AJAIGARH FORT, AJAIGARH, DISTRICT PANNA

Resetting of the dismantled platform of Rang Mahal I and II has been completed. Repairs to Gate nos. 2, 3 and 4, adjoining walls and the Hanuman Temple are in progress.

75. ROCK-SHELTERS, BHIMBETKA, DISTRICT RAISEN

The work of enclosing the area with G.I. barbed-wire fencing with R.C.C. posts, has been completed.

76. SIVA TEMPLE, BHOJPUR, DISTRICT RAISEN

Extraction of sandstone-blocks from Government leased quarry and transportation of the same to the site for restoration of balcony and *gauri-patta,* are in progress. Chiselling of stone slabs of required size for restoration of missing pieces and *pranala* of *gauri-patta* and the northern balcony, is also in progress. Refixing of corner base stones of ringed ceiling at their original place and clamping with copper clamps, fixed in lead are also in progress. All the missing iron clamps of roof members were being replaced with copper clamps. Efforts to cover the ceiling gap between inner edge of the wall and beam with original architectural members scattered on the ground were being made. The work of carving the missing northern pilaster facing west, is in progress.

77. FORT-WALL, RAISEN, DISTRICT RAISEN

Collection of stones and clearing of foundation of old, bulged, slided portion of the wall and restoration of the same in plumb and alignment in dry stone masonry have been taken up.

78. BUDDHIST SITE, SANCHI, DISTRICT RAISEN

Dismantling and restoration of the damaged portion of Structure 43 on the south, in plumb and alignment have been completed. Stone masonry pump-house has been constructed near ancient well and diesel motor pump has been fixed temporarily for pumping of water from ancient well upto Tank 2 (near Stupa 2). The base of ancient Tank 2 has been packed with stone soling and laid with lean cement-concrete. Laying of a layer of stone pitching over base concrete has been completed. Filled excavated trenches have been reopened and conservation of exposed votive stupas and Monastery 51, is in progress. Amount of drilling of two tube wells and laying of pipe line has been deposited to the department of Public Health Engineering. Repairs to old damaged G.I. barbed-wire fencing on angle iron posts with stone masonry dwarf wall mounted with M.S. grill from entrance to Public Health Engineering Department water tank to check trespassing, is in progress.

79. BUDDHIST MONUMENTS, SATDHARA, DISTRICT RAISEN

The restoration of damaged and missing walls of platform, stone encasing and *medhi* of Stupa 1 in plumb and alignment, is in progress. The work of debris clearance and filling of excavated trenches around Monastery 1 has been completed. Restoration of Monastery 1 in plumb and alignment, is in progress. The work of debris clearance of fallen structures of Stupas 4,6 and 7 has also been taken up for restoration in plumb and alignment as per the original.

80. BUDDHIST MONUMENTS, SONARI, DISTRICT RAISEN

Removal of debris around the stupas, compound-wall and restoration of compound-wall in dry stone masonry in plumb and alignment have been completed.

81. BADAL MAHAL, RAHATGARH, DISTRICT SAGAR

Restoration of damaged and missing brackets, *dasa* and stone *chhajjas* with fresh fine chisel-dressed stone brackets has been done. Restoration of arches in front and rear balconies over the main gate with fresh chisel-dressed stones, base pillars, arches, etc., has been done.

82. FORT, KHIMLASA, DISTRICT SAGAR

Removal of debris of fallen portion of fort-wall and restoration of the fort-wall and adjoining cells in plumb and alignment, are in progress.

83. ANCIENT SITE, BHARHUT, DISTRICT SATNA

R.C.C. posts have been procured and fixed around the protected area to demarcate the protected area.

84. FORT, DHAMONI, DISTRICT SAGAR

Removal of settled debris for restoration of damaged and fallen portion of guard room has been completed. Restoration of damaged and missing portion of guard room is in progress.

85. BUDDHIST MONUMENTS, PANGURARIA, DISTRICT SEHORE

Restoration of damaged, missing and out-of-plumb platform wall in plumb and alignment, is in progress.

86. VIRATESHVARA TEMPLE, SOHAGPUR, DISTRICT SHAHDOL

Excavation of foundation for construction of stone masonry dwarf wall, mounted with angle iron fencing for safety of the temple and to check trespassing is in progress.

87. DHEKLNATHA STUPA, GYARASPUR, DISTRICT VIDISHA

Dismantling and resetting of the out-of-plumb, damaged and fallen portion of veneering stones of the stupa in plumb and alignment have been completed. The work of chiselling of stone slabs for the damaged and missing portion of moulded stone platform on the four sides of the stupa, which once accommodated the Buddha sculptures in sitting posture, is also completed.

88. BIJAMANDAL, VIDISHA, DISTRICT VIDISHA

Replacement of low level G.I. barbed-wire fencing on angle iron posts on northern side of the temple with stone masonry dwarf wall, mounted with G.I. barbed-wire fencing on angle iron posts is in progress to strengthen the security and to check encroachment.

BHUBANESWAR CIRCLE

MADHYA PRADESH

89. DANTESVARI TEMPLE, DANTEWADA, DISTRICT BASTAR

The much damaged roof of Chhoti Maa Temple, existing on the left side of Dantesvari Temple, has been dismantled and replaced by tiled-roof. The top of the roof of the *mukha-mandapa* of Dantesvari Temple was also watertightened. The wooden grills fixed around the *mukha-mandapa* have been colour washed with assorted golden brown paint to save the wood work.

90. BHIMA KICHAKA TEMPLE, MALHAR, DISTRICT BILASPUR

Systematic repairs and watertightening all around the dilapidated superstructure have been taken up.

91. DURGA TEMPLE, LEPHAGARH FORT, DISTRICT BILASPUR

Around the temple, M.S. angle iron barbed-wire fencing has been provided.

92. SIVA TEMPLE, GANDAI, DISTRICT RAJNANDGAON

The pointing of the outer wall of the temple was attended to. The undulated damaged pavement around the temple was provided with dressed red flag-stones. The compound-wall, topped with barbed-wire fencing was restored.

ORISSA

93. BARABATI FORT, DISTRICT CUTTACK

The exposed compound-wall of the fort was raised upto a considerable height by means of laterite blocks.

94. BUDDHIST SITE AT LALITAGIRI, DISTRICT CUTTACK

The newly exposed much dilapidated southern wing of the Monastery 4 was taken up for conservation.

95. SINGHANATHA MAHADEO TEMPLE, GOPINATHPUR, DISTRICT CUTTACK

Pointing of open joints around the *sikhara* of the temple was attended to.

96. GROUP OF TEMPLES, MAHENDRAGIRI, DISTRICT GAJAPATI

Construction of serpentine staircase, almost 300 feet long, connecting Yudhisthira and Bhima Temples, has been completed.

97. TEMPLES AT KOTAKOLA, DISTRICT GANJAM

The facelifting, rectification of structural defects of the *sikharas,* watertightening, relaying of undulated surface of the courtyard, changing of damaged wooden rafters and the beams of the *mukha-mandapas* of the twin temples, have been taken up and completed.

98. EXCAVATED MONASTIC-COMPLEX, RATNAGIRI, DISTRICT JAJPUR

Conservation work in the single-winged monastery, adjacent to the museum, by means of pointing, filleting and watertightening has been completed.

The votive stupas in front of the monastery were systematically arranged by placing them on a terraced pavilion in open air.

Conservation-cum-beautification work of the monument as well as the museum building has been completed.

99. JAGANNATHA TEMPLE, DISTRICT JAJPUR

The levelling and refixing of flat stones of the undulated and damaged stone pavement around Jagannatha Temple have been taken up for conservation by sandfilling and laying of uniformly dressed stone blocks. The said work was completed.

100. TRILOCHANESVARA TEMPLE, DISTRICT JAJPUR

The undulated and damaged stone pavement around Trilochanesvara Temple was taken up for conservation by sandfilling at the base and also by laying uniformly dressed stone-blocks. The said work has been completed.

101. ROCK-SHELTER, SITABHINJI, DISTRICT KEONJHAR

In order to protect the extant mural paintings at Sitabhinji, gradually fading out due to their exposure to sun, a bamboo splinter screen with application of green paints was provided to arrest the ultra-violet ray. Besides, just below the paintings on the floor, 6' x8' platform with railing on three sides was provided with a height of 7' to facilitate the tourists to have a view of the

paintings which is 21' above the existing ground level.

102. DAKSHYA PRAJAPATI TEMPLE, BANPUR, DISTRICT KHURDA

The conservation work of *jagamohana* was attended to by means of grouting and resetting out-of-plumb stones and providing R.C.C. roof to arrest water leakage. The relaying work with dressed stone blocks of the missing *pidha of jagamohana* has been done. The worn-out and damaged architectural members of the southern side of the Vimana *(sikhara)* were replaced and reset with new ones. The work of out-of-plumb and damaged subsidiary niches for *parsvadevatas* in three sides, i.e., south, north and west, was taken up for consolidation and conservation. The work is in progress.

The structural repairing work of Vimana including resetting, renewing the architectural members, dismantling the damaged structure, pointing, grouting etc., are in progress. Accordingly, the western side *raha paga,* which was bulged-out over six inches from the original setting, was dismantled. The work is in progress.

103. KHANDAGIRI UDAIGIRI CAVES, BHUBANESWAR, DISTRICT KHURDA

Construction of the boundary-wall around the monument, parallel to the road running in front of Udaigiri Hill, is in progress.

104. LINGARAJA TEMPLE-COMPLEX, BHUBANESWAR, DISTRICT KHURDA

In continuation of the previous year's *(1995-96,* p. 167) work, minor shrines of Lavanesvara in the south-west corner of the complex, was dismantled for resetting. Accordingly, the out-of-plumb veneering stone members were reset in their position and restored as per the original. Similarly, Ladukesvara shrine was also conserved and restored. The work of watertightening, grouting and underpinning of the other shrines inside the complex, was completed in all respects.

In order to prevent water seepage in Parvati Temple within the Lingaraja Temple-complex, the pointing and grouting were attended to.

The damaged roof of Dhenkighar (Samaraghar) of Lingaraja Temple was dismantled and R.C.C. roof slabs were casted accordingly for better preservation against weather effects.

105. MUKTESVARA TEMPLE, BHUBANESWAR, DISTRICT KHURDA

Undulated floor of the temple was rectified by providing newly dressed stone blocks. All the nine sub-shrines including the main temples in the complex, were subjected to pointing, watertightening, etc. Besides, pointing and watertightening of the laterite boundary-wall of the temple were also attended to. The temple was provided with a new *chandrasila,* carved in sandstone.

106. RAMESVARA TEMPLE, BHUBANESWAR, DISTRICT KHURDA

Construction of dwarf boundary-wall towards the southern side of the temple, was taken up to avoid unauthorized trespassing within the protected area. On the top of the dwarf wall, barbed-wire fencing has been provided. Relaying of undulated floor in front of the temple was also completed.

107. RASIKA RAYA TEMPLE, HARIPURGARH,DISTRICT MAYURBHANJ

The missing frontal pillars of the temple have been restored as per the original. The reconstruction of superstructure over the pillars to relay the missing western roof of Rasika Raya Temple is in progress.

108. JAGANNATHA TEMPLE, DISTRICT PURI

In continuation of the previous year's work *(1995-96,* p. 168), deplastering of *sikhara* was done besides attending to the exposed area, and replacing the weathered stones by newly dressed stone-blocks. After deplastering *amalaka* and *khapuri,* sixteen stainless steel columns were provided below the *amalaka* as an additional support and *khapuri* has been packed and sealed with stone-blocks and epoxy.

Around the base of *kalasa,* one horizontal space on top of the *khapuri,* special type concrete mortar was laid to make it more water resistant.

The much-damaged *kanikapaga* on the south-east has been restored and duly conserved. Pointing, underpinning and grouting for consolidation of loose and effective stones were also provided.

For repairing the *amalaka* portion, a tubular scaffolding was erected. The stone brought from Tapang quarry were dressed and fixed on the damaged portion of *amalaka.* All damaged stones were refixed and reset with new stones. The work is in progress.

Emergency repairing work of *garbhagriha* was undertaken during the car festival and accordingly, damaged portions have been repaired. Assorted colour wash was provided on the battlement around Meghanad Prachir (outer enclosure-wall of the temple).

The damaged grill cordoning *Aruna-stambha,* in front of the main entrance was repaired by providing new iron angle frame and restored properly.

109. SUN TEMPLE, KONARAK, DISTRICT PURI

To keep away the tourists and visitors against any vandalism, galvanized iron pipes have been provided for barricading the Temple.

CALCUTTA CIRCLE

WEST BENGAL

110. SIDDHESVARA TEMPLE, BAHULARA, DISTRICT BANKURA

Barbed-wire fencing has been repaired including, painting of iron angle posts.

111. JOR BANGLA TEMPLE, BISHNUPUR, DISTRICT BANKURA

Terraced platform has been renewed with lime concrete. Barbed-wire fencing has been provided all around the temple. The surrounding area of the temple has been levelled to avoid water stagnation.

112. KALACHAND TEMPLE, BISHNUPUR, DISTRICT BANKURA

Barbed-wire fencing has been repaired with due painting of angle iron posts.

113. LALJI TEMPLE, BISHNUPUR, DISTRICT BANKURA

Underpinning of brick-work and pointing of *bhog-ghar* have been done.

114. RADHA GOVINDA TEMPLE, BISHNUPUR, DISTRICT BANKURA

Restoration of the broken portion of the plinth wall of *bhog-ghar* and *tulasi mancha* has been carried out with special bricks and composite mortar. Brick apron has been provided around the base of the temple. Work of barbed-wire fencing has been undertaken along the protected area of the temple.

115. RASMANCHA, BISHNUPUR, DISTRICT BANKURA

Patch roof terracing wherever required on structure along with brick underpinning work on arches in the front have been carried out. Besides, the entrance gate has also been repaired.

116. SHYAMRAI TEMPLE, BISHNUPUR, DISTRICT BANKURA

Structural repairs with special bricks and pointing have been undertaken for *sikhara* and the towers. Besides, roof terrace as well as terraced platform have been repaired. Retaining-wall has been constructed on the western side of the temple near the fencing to prevent further soil erosion around the site.

117. SHYAMSUNDAR TEMPLE, BISHNUPUR, DISTRICT BANKURA

Barbed-wire fencing around the complex has been repaired and the angle iron posts have been painted.

118. STONE GATEWAY, BISHNUPUR, DISTRICT BANKURA

Plinth of the Gateway has been stabilized by pitching of laterite blocks to prevent soil erosion due to the presence of a *nala* nearby.

119. SAILESVARA AND SARESVARA TEMPLE, DIHAR, DISTRICT BANKURA

Underpinning of laterite stone masonry has been carried out on the plinth of the temples and at some parts of the embankment. Northern, eastern and southern sides of the temple facades have been pointed. Repairing of the damaged barbed-wire fencing along with the painting of posts, has been done.

120. GOKULCHAND TEMPLE, GOKULNAGAR, DISTRICT BANKURA

Sikharas of the main shrine including cornices and the parapet-walls have been repaired. Roof terracing of the *chala* roof has been completed with lime-concrete. Floors of the verandah and *garbhagriha* have been renewed with lime-concrete. Staircase of the temple has been repaired with laterite stone masonry work, lime-plastering and lime punning. Vaulted roof of the portico has been repaired with laterite stone masonry work and pointing. Brick apron all around the temple has been provided. Levelling of the surrounding area to prevent water stagnation around the main temple has also been done.

121. RATNESVARA TEMPLE, JAGANNATHPUR, DISTRICT BANKURA

To protect the damaged plinth of the main shrine, repairing by brick masonry work has been carried out. Flooring, replastering and white washing of *bhog-ghar* have been done.

122. GROUP OF FOUR ANCIENT TEMPLES, BEGUNIA, DISTRICT BARDHAMAN

After clearing the vegetational growth, pointing of stone joints on the outer facades of the temples has been done.

123. TOMBS OF SHER AFGAN, NAWAB QUTUBUDDIN AND BAHARAM SAKKA, BARDHAMAN, DISTRICT BARDHAMAN

Raised platform of the main shrine has been restored with brick masonry work and lime-concrete terracing. Main dome of the shrine (pl. LXXXVIII) and flat rooftop (pl. LXXXIX) have been relaid and ceiling has been replastered by changing of beams and *burgahs.* Damaged marble slabs of the tombs have been replaced.

124. SIVA TEMPLE, KALNA, DISTRICT BARDHAMAN

Ambulatory pathway of the temple-complex has been relaid with lime-concrete and iron railings have been fixed alongside the pathway of the lawn.

125. LALJI TEMPLE-COMPLEX, KALNA, DISTRICT BARDHAMAN

High compound-wall of the Lalji Temple has been restored with due brick-work and plastering. M.S. railings have been provided on both sides of the pathway connecting Lalji Temple and other temples in the complex.

Plate LXXXVIII



A



B

Bardhaman, Tombs of Sher Afgan, Nawaab Qutubuddin and Baharam Sakka, main shrine : A, before and B, after conservation

Plate LXXXIX



A



B

Bardhaman, Tombs of Sher Afgan, Nawaab Qutubuddin and Baharam Sakka, roof top : A, before and B, after conservation

126. DHARMARAJA TEMPLE, KUBILASHPUR, DISTRICT BIRBHUM

After the removal of deep rooted trees, stone members of the structure have been reset followed by pointing of stone joints.

127. TEMPLE OF BASULI, NANOOR, DISTRICT BIRBHUM

The roofs of *natamandir* of the main shrine and the adjoining sub-shrines have been repaired with lime-concrete. Relaying of the floor of all the eight sub-shrines including replastering of the walls have been done.

128. DAMODAR TEMPLE, SURI, DISTRICT BIRBHUM

Bulged-out *sikhara* of the temple has been repaired with proper grouting and lime-concrete terracing made over *chala* roofs. Underpinning of brick-work has been done to the plinth. Repairing of fencing has also been carried out.

129. METCALFE HALL, CALCUTTA

Broken capitals of pillars on the northwestern corner have been restored. Damaged beams and *burgahs* of the roof of the western verandah have been replaced and resurfaced.

130. THAKUR BARI (MAHARSHI BHAVAN), JORASANKO, CALCUTTA

Though not protected by the Survey, the conservation work of the Maharshi Bhavan was carried out by the Calcutta Circle. Long wooden beams running over pillars on the western side of central courtyard have been replaced including sealing and grouting of the cracks in the walls. Damaged beams and *burgahs* on the northern and southern sides have also been replaced. After replacing clay burnt tiles, lime-concrete terracing has been done on the northern roof. Replastering and painting have also been done to the exterior wall surface. Doors and windows have been repaired and painted. Anti-corrosive paints have also been applied on iron railings and wooden members.

131. VICTORIA MEMORIAL HALL, CALCUTTA (UNDER CIVIL DEPOSIT WORK)

Replastering has been done on the parapet-walls and the ceilings. Pointing by composite mortar has been done to the open marble joints. Damaged roof has been resurfaced.

132. HAMESESVARI TEMPLE, BANSBERIA, DISTRICT HOOGHLY

Lightening conductor has been provided on the Hamsesvari Temple. Damaged stone encasings and the pillars supporting the verandah of the upper story have been renewed.

133. DUPLEIX PALACE, CHANDANNAGAR, DISTRICT HOOGHLY

Plinths of the kitchen and the toilet block have been protected by providing brick apron around them. Brick-work and plastering work have been done in the kitchen and toilet blocks. Terrazo flooring work has also been carried out along with the decorative cement washing to the exterior surface. The doors and windows have been painted along with cement priming and plastic painting to the inner walls. After dismantling the damaged floor of the auditorium building, flat soling of bricks has been laid. RS joists to the roof of the auditorium building, damaged beams and *burgahs* have been replaced and the roof of the auditorium building has been relaid after laying tiles and lime-concrete over it. Damaged western wall of the auditorium building has been constructed providing lintels as per requirement.

Brick-work, plastering and decorative cement washing have been done to the exterior surfaces of the boundary-wall. The work was undertaken under Civil deposit works.

134. DUTCH MEMORIAL MONUMENT OF SUSANNA ANNA MARIA, CHINSURAH, DISTRICT HOOGHLY

Brick compound-wall has been erected around the protected area of the monument (pl. XC).

135. BRINDABAN CHANDRA THAKUR'S MATH, GUPTIPARA, DISTRICT HOOGHLY

Lime-concrete terracing of the roof and re-plastering of the walls of the Krishnachandra Temple have been done (pl. XCI).

136. TOMB AND MOSQUE, SATGAON, DISTRICT HOOGHLY

Underpinning of brick-work of the basement of the mosque and watertightening of the exposed wall surface have been done.

137. ADINA MOSQUE, ADINA, DISTRICT MALDA

Uprooting of trees from the bulged-out domes of the Ladies Gallery and repairing often numbers of domes have been taken up. The entire roof treatment has been done by lime-concrete terracing. The eastern wall has been consolidated with proper brick-work. One rain-water drain has been provided on the northern side of the Ladies Gallery.

138. TOWER, NIMASARAI, DISTRICT MALDA

Brick edging of the approach road has been done after earth filling in the compound. Besides, fencing around the protected compound of the monument and fixing of M.S. grill gate at the entrance have been done.

139. RESIDENCY CEMETERY, BABULBONA, DISTRICT MURSHIDABAD

The damaged brick compound-wall on southern side has been restored. Besides, plastering and pointing have also been carried out to the tombs as required.

140. OLD ENGLISH CEMETERY, COSSIMBAZAR, DISTRICT MURSHIDABAD

Damaged tombs in the cemetery have been repaired and the brick boundary-wall has been restored and replastered wherever required.

141. DUTCH CEMETERY, KALIKAPUR, DISTRICT MURSHIDABAD

Underpinning of brick masonry, pointing and re-plastering have been done to the tombs of the cemetery wherever required.

142. HAZARDUARI PALACE - COMPLEX, MURSHIDABAD, DISTRICT MURSHIDABAD

Damaged wooden beams and decorative frames of arched verandah of the Medina in the complex have been replaced (pl.. XCII). The steps in the clock-tower in the complex have been repaired and wooden platform has been changed. After raising the outer level, the brick-apron has been relaid to prevent water stagnation at the base of the clock-tower. Besides, iron railing around it has been repainted.

The facelifting of Hazarduari Palace (pl. XCIII) has been done by scraping, patch replastering wherever required and colour washing of the exterior surface. In Record Room and Toshakhana of the Palace, damaged beams and *burgahs* have been replaced. Doors and windows of the rooms have been repaired and painted. Resurfacing of the lime-concrete approach road has been done and toilet block of the Palace has been restored.

Plate XC



A



B

Chinsurah, Dutch Memorial Monument, boundary-wall : A, before and B, after conservation

Plate XCI



A



B

Guptipara, Brindavan Chandra Thakur's Math, Krishna Chandra Temple : A, *before and* B, *after conservation*

Plate XCII



A



B

Murshidabad,Hazarduari Palace-complex, Medina : A, before and B, after conservation

Plate XCIII



A



B

Murshidabad, Hazarduari Palace-complex : A, *before and* B, *after face-lifting*

143. IMAMBARA, MURSHIDABAD, DISTRICT MURSHIDABAD

The roof of a spacious hall on the northwestern side of the first floor has been repaired with R.S. joist, clay burnt tiles, etc., as per the original (pl. XCIV).

144. TOMB OF AZIMUNNISA BEGUM, DAUGHTER OF MURSHID QULI KHAN, AZIMNAGAR, MURSHIDABAD, DISTRICT MURSHIDABAD

Pointing work was carried out partly in the main structure. Besides, damaged brick compound-wall on the southern side has been partially repaired and plastered.

145. TOMB OF SUJA-UD-DIN, ROSHNIBAG, DISTRICT MURSHIDABAD

The approach road in the complex has been re-laid.

146. TOMB AND MOSQUE OF MURSHID QULI KHAN, SABJIKATRA, DISTRICT MURSHIDABAD

Underpinning and pointing of the squinches and walls wherever required, have been carried out. Besides, resurfacing of the lime-concrete pathway has been done.

147. EXCAVATED REMAINS, BALLALDHIPI, BAMANPUKUR, DISTRICT NADIA

Damaged barbed-wire fencing around the site has been repaired. Underpinning and pointing of the exposed structure wherever required, has been done.

148. OLD TEMPLE, BANDA, DISTRICT PURULIA

The *mukha-mandapa* of the temple has been repaired with sandstone masonry work. Besides, pointing has been done to the exterior walls of the temple and brick-apron has also been provided around the plinth of the temple.

149. DARGAH OF SHAH ATA, GANGARAMPUR, DISTRICT SOUTH DINAJPUR

Stone masonry and lime-concreting work to the copings of the walls of the mosque have been done.

SIKKIM

150. DUBDI MONASTERY, YOKSUM, DISTRICT WEST SIKKIM

During the period under review, approach road to the monastery has been duly restored by rubble stone masonry work.

Structural strengthening and stabilization of foundation have been done by inserting R.C.C. beam at bottom and laying concrete slab along the walls. The bulged-out walls have been stabilized by removing them in appropriate mortar by strengthening the core.

CHANDIGARH CIRCLE

HARYANA

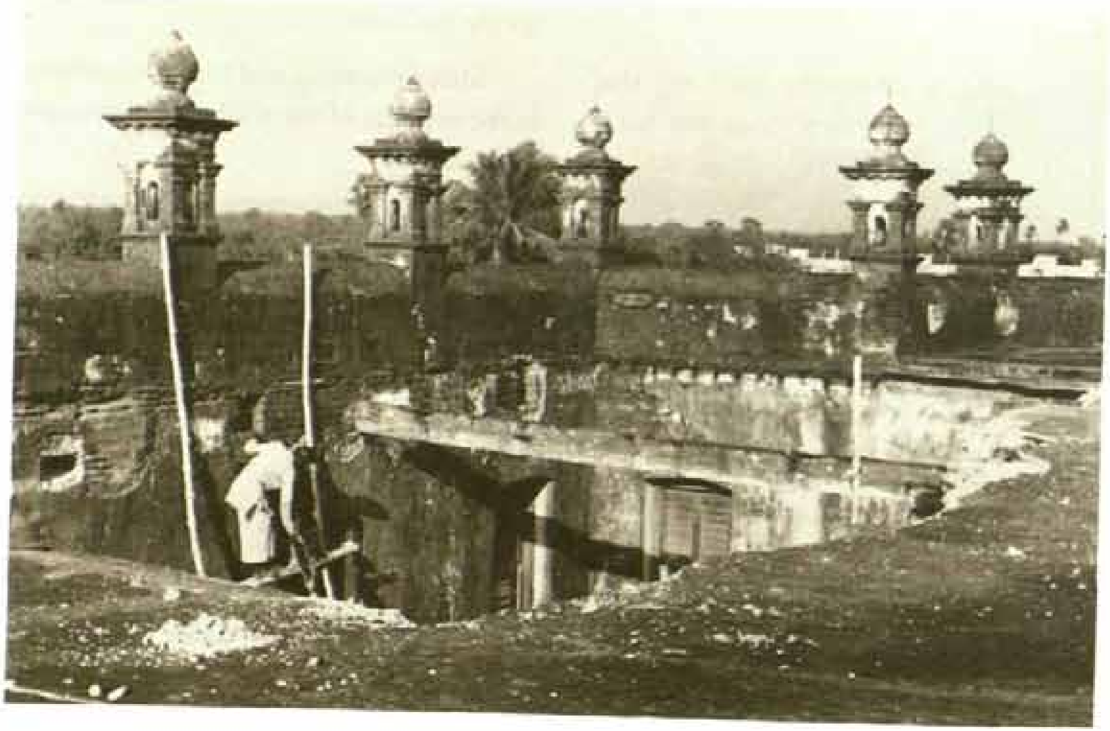
151. SURAJ KUND, FARIDABAD, DISTRICT FARIDABAD

The work of reconstruction of retaining wall with R.R. stone masonry in lime-mortar and pointing the same matching the original, was taken up. The overgrowth of vegetation was removed from the structures.

152. BAOLI GHAUS ALI KHAN, DISTRICT FARUKHNAGAR

The damaged walls of the cells and gate of the *baoli* with random rubble stone and *lakhauri* brick masonry were repaired and lime-plastered.

Plate XCIV



A



B

Murshidabad, Imambara, roof of hall: A, *before and* B, *after conservation*

153. EXCAVATED REMAINS, AGROHA, DISTRICT HISSAR

Excavated ancient structure was taken up for restoration as per the original pattern and cells of the stupa were reproduced.

154. PRITHVI RAJ CHAUHAN'S FORT, HANSI, DISTRICT HISSAR

Construction of brick-walls and main hall for draining out the rain-water including extension of pipe line for drainage purpose was done.

155. FEROZ SHAH'S PALACE, HISSAR, DISTRICT HISSAR

Restoration of Tehkhana, cells and gates were taken up by way of underpinning, watertightening and pointing with *lime-surkhi* as per the original pattern.

156. GUJRI MAHAL, HISSAR, DISTRICT HISSAR

The cells and courtyard of Gujri Mahal was taken up for repairing, besides concreting the flooring and pointing the joints of the random rubble masonry wall. Lime-cement concreting, restoration of cells, courtyard portion with R.R. masonry and pointing the same have been executed.

157. SIVA TEMPLE, KALAYAT, DISTRICT KAITHAL

The foundation was stabilized and the capillary action was checked by inserting lead sheet.

158. PATHER MASJID, THANESAR, DISTRICT KURUKSHETRA

The restoration and reproduction of ancient *lakhauri* brick masonry as per the original pattern and flooring including pointing the joints in front of Masjid were done.

159. SHEIKH CHHILLI'S TOMB, THANESAR, DISTRICT KURUKSHETRA

The restoration of the gate of the terrace of the Madrasa was taken up and completed by replacing the old and decayed wooden lintels and doors of the gate and pointing the joints and underpinning the patches of the *lakhauri* brick masonry.

160. KHWAZA KHAZIR'S TOMB, SONEPAT, DISTRICT SONEPAT

Apron around the monument and flooring was restored. The work of underpinning, *lakhauri* brick masonry and pointing with lime-mortar as per the original pattern has been done.

HIMACHAL PRADESH

161. LAXMI NARAYANA TEMPLE, CHAMBA, DISTRICT CHAMBA

The damaged, sunken flag-stone flooring of the courtyard of the temple was taken up for repair. The damaged shrines were replaced with new ones. The sunken portions were dismantled and reset over concrete base. The joints were pointed and watertightened.

162. LORD ELGIN'S TOMB, DHARAMSALA, DISTRICT KANGRA

Dislocated and bulged-out moulded and carved dressed stones of the tombs were dismantled and reset as per the original. The damaged pieces were replaced with new ones.

163. SIVA TEMPLE, BAIJNATH, DISTRICT KANGRA

The tank of the temple was provided with flag-stone slab flooring over base concrete. The side walls were plastered.

164. NURPUR FORT, NURPUR, DISTRICT KANGRA

The restoration of the temple ruins in C.R. masonry was taken up and completed. The brick structure inside the gateway was also repaired.

165. GAURI SHANKARA TEMPLE, NAGAR, DISTRICT KULLU

Dislodged carved stones of the Laxmi Narayana Temple were dismantled and reset. The flooring of the temple was also taken up and completed.

166. TABO MONASTERIES, TABO, DISTRICT LAHAUL AND SPITI

The restoration work of the holy tank with R.R stone masonry in lime-cement mortar was taken up. The restoration of *chortens* with R.R. stone and mud brick masonry was completed.

167. MIRKULA DEVI TEMPLE, UDAIPUR, DISTRICT LAHAUL AND SPITI

The retaining wall of the temple was restored and the joints pointed. The damaged and decayed wooden planks of the temple were also replaced with the new ones.

168. PANCHAVAKTRA TEMPLE, MANDI, DISTRICT MANDI

The platform in C.R. stone masonry was taken up by filling of boulder stone-block in the back side of the temple.

PUNJAB

169. KOS MINAR, RAJA TAL, DISTRICT AMRITSAR

The loose and decayed masonry of the Kos Minar was restored by reproducing the missing *lakhauri* brick masonry, replastering and pointing the joints, and reconcreting the platform.

170. BHATINDA FORT, BHATINDA, DISTRICT BHATINDA

The fallen patches of brick masonry work in the inner fortification wall was taken up for repair. The foundation of the Gurudwara was stabilized by reconstructing the core of the fortification wall after removing the loose and decayed mud-bricks. The patches of the flooring of the ramp was also repaired and watertightened.

171. DAKHNI SARAI, DAKHNI, DISTRICT JALANDHAR

The loose and decayed terrace-concrete of the cells was removed and reconcreted. The disturbed brick masonry work of the cells were removed and repaired as per the original. The mosque inside the *sarai* was also repaired and made presentable.

172. MUGHAL BRIDGE, JALANDHAR, DISTRICT JALANDHAR

The damaged and dilapidated bridge was taken up for repairs by way of underpinning, pointing and restoration of the dislodged portions of the *lakhauri* bricks as per the original.

173. KOS MINARS, KHANPUR, DISTRICT JALANDHAR

The loose and decayed patchwork of the brick masonry was repaired by way of underpinning, watertightening, lime-concreting and pointing the joints. Later it was plastered as per the original pattern.

174. NOORMAHAL SARAI, DISTRICT JALANDHAR

The work of restoration of the eastern gate cells of the Sarai was taken up by way of underpinning, watertightening and restoration of disturbed masonry, pointing the joints, laying of cement, concrete and tile brick terracing as per the original pattern. The mosque and well inside the Sarai were also repaired.

175. ANCIENT SITE, ROPAR, DISTRICT RUPNAGAR

The loose earth and debris were removed from the excavated trenches and vegetational growth was cleared. The repairing of the dilapidated structures of Nalagarh Kothi was taken up and work is in progress.

CHENNAI CIRCLE

KERALA

176. FORT ST. ANGELO, KANNUR, DISTRICT KANNUR

The fallen moat-wall, located near the entrance to the fort, was reconstructed as per the original, using the old stones.

177. FORT, TELLICHERRY, DISTRICT KANNUR

The dilapidated Mangalore tiled-roof of the building occupied by the Survey, was relaid as per the original. The wall surface was replastered.

178. NETRIMANGALAM SIVA TEMPLE, PATTAMBI, DISTRICT PALAKKAD

The fallen outer *prakara* -wall was reconstructed as per the original.

179. SIVA TEMPLE, EYYAL (CHEMMANTHITTA), DISTRICT THRISSUR

The fallen and missing portion of the *prakara,* built in laterite masonry, was reconstructed as per the original, using both available old and new stones.

180. FORT, ANJENGO, DISTRICT THIRUVANANTHAPURAM

The archaeological area around the monument was fenced over a dwarf wall.

181. JAINA TEMPLE, KIDANGANAD, DISTRICT WYNAD

The out-of-plumb plinth of the cloister *mandapa* in the east and the north was reset to plumb.

PONDICHERRY

182. VARADARAJAPERUMAL TEMPLE, TIRUBHUVANI, PONDICHERRY

The *madapalli* was provided with a new roof as per the original with a fresh weathering course. The walls were replastered.

TAMIL NADU

183. JVARAHARESVARA TEMPLE, KANCHIPURAM, DISTRICT CHENGALPATTU - M.G.R.

The roof of the *maha-mandapa* of the main shrine was rendered watertight by laying a fresh layer of weathering course after removing the thick, decayed old course.

184. DHENUPURISVARA TEMPLE, MADAMBAKKAM, DISTRICT CHENGALPATTU - M.G.R.

The decayed thick weathering course of the axial *mandapas* was removed and the roof was relaid with a fresh, thinner weathering course.

185. KAILASANATHA TEMPLE KANCHIPURAM, DISTRICT CHENGALPATTU - M.G.R.

A very thin coat of lime mortar was applied on the weathered outer surface of the *prakara* as a protective measure as was done in the past.

186. SHORE TEMPLE, MAMALLAPURAM, DISTRICT CHENGALPATTU - M.G.R.

The archaeological area was fenced with plastic coated grill to avoid intrusion of visitors.

187. MUNKUDUMISVARA TEMPLE, P.V.KALATHUR, DISTRICT CHENGALPATTU - M.G.R.

The missing and fallen *prakara* close to the main shrine was reconstructed as per the original.

188. DUTCH FORT AND CEMETERY, SADRAS, DISTRICT CHENGALPATTU - M.G.R.

The missing and fallen portion of fortification on the southwestern corner was reconstructed as per the original in the matching brick masonry as was done in the previous years.

189. BLOCK NO. XXVI (OLD OFFICERS' MESS), FORT ST. GEORGE, CHENNAI, DISTRICT CHENNAI

The Mangalore tiled-roof in the first floor of this building, housing the Fort Museum, was relaid to arrest leakage.

190. FORT AND RAMPART, FORT ST. GEORGE, CHENNAI, DISTRICT CHENNAI

Rank vegetation grown over the rampart in the western portion was removed. The moss and lichen over the St. George Gate were also removed. The cracks in the same place were filled.

191. MURUGANATHASVAMI TEMPLE, TIRUMURUG-ANPOONDI, DISTRICT COIMBATORE

The undulating stone flooring of the *maha-mandapa* of the main shrine was relaid.

192. FORT, VELLORE, DISTRICT NORTH ARCOT-AMBEDKAR

The fallen moat-wall on the west of the fort was reconstructed as per the original over a pitching of boulder and gravel.

193. JALAKANTESVARA TEMPLE, VELLORE, DISTRICT NORTH ARCOT - AMBEDKAR

The missing niche and *nandi* elements over the brick coping of *the prakara* on the east were reconstructed as per the original.

194. SUGRIVESVARA TEMPLE, SIRCARPERIAPALAYAM, DISTRICT PERIYAR

The reconstruction of the *mukha-mandapa* was completed by resetting the *prastara* and the roof-slabs as per the original. A fresh weathering course was provided.

195. MINAKSHISUNDARESVARA TEMPLE, AMMANKU-RICHI, DISTRICT PUDUKKOTTAI

The out-of-plumb open *pillared-mandapa,* located in the inner *prakara,* was dismantled after due documentation and reconstructed as per the original.

196. SIVA TEMPLE, IRUMBANADU, DISTRICT PUDUKKOTTAI

The dismantled temple is being reconstructed as per the original and was completed upto *prastara* level.

197. VALARMATISVARA TEMPLE, NIRPALANI, DISTRICT PUDUKKOTTAI

The out-of-plumb and sunken pillared *mukha-mandapa* was dismantled after documentation and the same is being reconstructed as per the original.

198. KAILASANATHA TEMPLE, VELLANUR, DISTRICT PUDUKKOTTAI

The dismantled temple was reconstructed as per the original.

199. NARASIMHASVAMI TEMPLE, NAMAKKAL, DISTRICT SALEM

The undulated stone flooring of the *maha-mandapa* and the cloister were reset as per the original.

200. NITISVARASVAMI TEMPLE, SRIMUSHNAM, DISTRICT SOUTH ARCOT

The out-of-plumb pillars of the cloister-*mandapa* were reset. A broken beam was replaced. The leaky roof was rendered watertight by providing a fresh weathering course.

201. BRIHADISVARA TEMPLE, GANGAIKONDA-CHOLAPURAM, DISTRICT TIRUCHCHIRAPPALLI

The accumulated debris upto the *kapota* moulding of the northern arm of the eastern *prakara* was removed to bring the area to original working level. In the process, a circular bastion, evidently a later addition, was

discovered. A stone paved pathway has been provided from the *mahadvara* to the temple.

202. ERUMBESVARA TEMPLE, TIRUVERUMBUR, DISTRICT TIRUCHCHIRAPPALLI

A stone paved pathway was provided from the *mahadvara* to the main shrine. The roofs of the *mandapas* were rendered watertight.

203. BRAHMAPURISVARA TEMPLE, BRAHMADESAM, DISTRICT VILLUPURAM-RAMASAMY PADAYACHIYAR

The inner *prakara* of this recently protected monument was in a dilapidated condition as its outer veneer had completely fallen leaving the core exposed. The *cloister-mandapa* had also sunk at places. The *outer prakara,* fully covered with rank vegetation was cleared off. Besides, the northern portion of the outer veneer was reconstructed upto three courses, using the available stones.

204. PATALESVARA TEMPLE, BRAHMADESAM, DISTRICT VILLUPURAM-RAMASAMY PADAYACHIYAR

The clearance of rank vegetation and removal of debris all around the monument leading to exposing a few buried mouldings of the *adhishthana* have been done (pl. XCV). The monument was duely documented. The reconstruction of the dismantled northern wall of the *garbhagriha* is in progress (pl. XCVI).

205. RAJAGIRI FORT, GINGEE, DISTRICT VILLUPURAM -RAMASAMY PADAYACHIYAR

The dead plaster of inside wall surface of the cells of the inner, western row of structures known as 'Horse Stables' was removed and the same was replastered with lime-plaster (pl. XC VII). The debris accumulated in the cells were removed to expose the original floor.

206. PATTABHIRAMA TEMPLE, NARASINGARAYANPETTAI, DISTRICT VILLUPURAM-RAMASAMY PADAYACHIYAR

The lower two *talas* of the *gopura* were rendered watertight by applying a thin coat of fine ground lime-mortar after removing the moss and lichen spread over them and mending the broken masonry and damaged stucco figures as per the original. The brick masonry of *sikhara* over the twelve-pillared *mandapa* located in front of the temple was also similarly watertightened.

GUWAHATI CIRCLE

ARUNACHAL PRADESH

207. TAWANG MONASTERY, TAWANG, DISTRICT TAWANG

In continuation of the previous year's work *(1995-96,* p. 174) staircase has been provided to the store building. Pointing has also been done wherever necessary.

ASSAM

208. RUINS, KHASPUR, DISTRICT CACHAR

The decayed lime-concrete and plastering have been replaced besides providing brick pathways and approach to the ruins. Repairing of ancient compound-wall has been attended to.

209. IDGAH, RANGAMATI HILLS, DISTRICT DHUBRI

Repairs to the missing brick-work, plastering of *mihrab* wall, replacement of missing cornices and leaf designs in brick pillars have been carried out.

210. MOSQUE AND TANK, RANGAMATI, DISTRICT DHUBRI

During the period, the missing bricks were replaced. It also undertook plastering of the

Plate XCV



A



B

Brahmadesam, Patalesvara Temple : A, *before and* B, *after conservation*

Plate XCVI



A



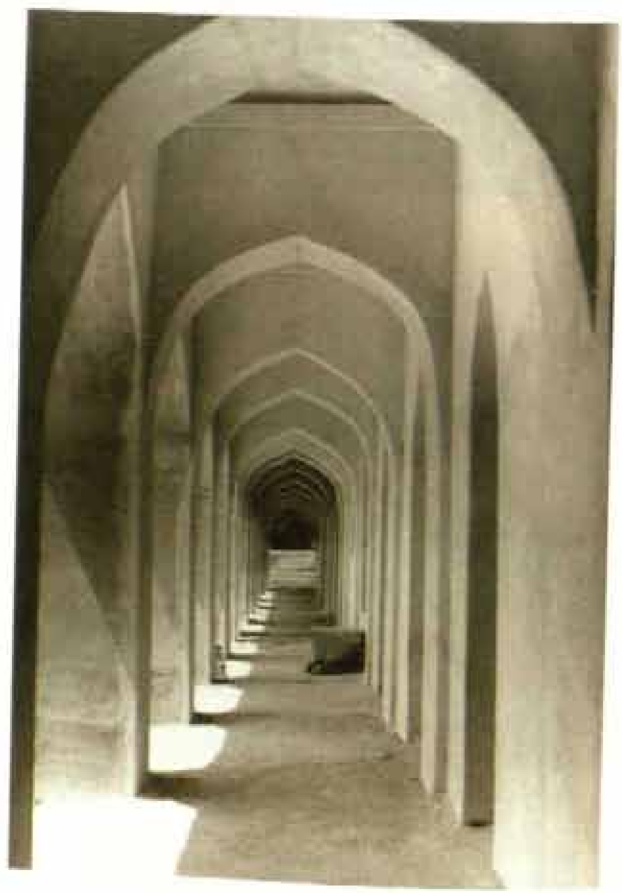
B

Brahmadesam, Patalesvara Temple : A, *before and* B, *after conservation*

Plate XCVII



A



B

Gingee, Rajagiri Fort, horse stable : A, *before and* B, *after conservation*

dome and repairs to the damaged moulded pillars.

211. ANCIENT CAVES, JOGIGHOPA, DISTRICT GOALPARA

During the year under review, the Circle provided retaining wall to check landslide and iron ladder for access to the cave. Brick-pathways have been provided and earth cutting was done at several places.

212. RUINS, SURYAPAHAR, DISTRICT GOALPARA

Stone paving of the stupas as well as the sculptural remains have been undertaken. It also made provision for pathways and necessary drainage.

213. SIVA TEMPLE, NEGHERITING, DISTRICT GOLAGHAT

hi continuation of the previous year's (*1995-96,* p. 174) work, plastering and lime-concreting have been undertaken besides providing brick-on-edge pathways.

214. DUAR GORILLA ROCK INSCRIPTION, GUWAHATI, DISTRICT KAMRUP

Shed has been provided over the inscribed rock besides erecting a retaining wall to stop silting of inscription.

215. GROUP OF FOUR MAIDAMS, CHARAIDEO, DISTRICT SIBSAGAR

Pathways have been provided to the monument. Iron gate was also fixed.

216. DEVIDOL, GAURISAGAR, DISTRICT SIBSAGAR

In continuation of the previous year's *(1995-* 96,p.l74) work, plastering, pointing and lime-concreting have been done. The low lying areas of the courtyard have been filled with earth.

217. SIBDOL, GAURISAGAR, DISTRICT SIBSAGAR

The decayed plaster of the walls of *mukha-mandapa* was replaced. Lime-concreting and pointing have been attended to. Barbed-wire fencing has been provided.

218. DEVIDOL, JOYSAGAR, DISTRICT SIBSAGAR

During the period under review, the work of repairs, replacement of lime-concrete roof, plastering and plinth protection measures have been taken up.

219. GHANASHYAM'S HOUSE, JOYSAGAR, DISTRICT SIBSAGAR

Besides pointing and plinth protection measures, missing bricks have been provided.

220. GOLAGHAR, JOYSAGAR, DISTRICT SIBSAGAR

Lime-concrete flooring and plinth protection measures have been taken up.

221. KARENGGHAR PALACE, JOYSAGAR, DISTRICT SIBSAGAR

In continuation of the previous year's *(1995-* 96,p.l74) work, the open terrace floor has been lime-concreted. Pointing and plastering work wherever missing have been attended to. Plinth, protection measures have also been taken up to strengthen the building.

222. RANGHAR PAVILION, JOYSAGAR, DISTRICT SIBSAGAR

Missing portions of decorative stucco works have been repaired besides attending to the work of plastering and lime-concreting. Fencing and an iron gate were also provided.

223. VISHNUDOL, JOYSAGAR, DISTRICT SIBSAGAR

The decayed lime-concrete of the *mukha-mandapa* has been replaced besides attending to the plastering and other necessary repairs.

224. SIBDOL, SIBSAGAR, DISTRICT SIBSAGAR

The decayed plaster of the walls of the *mukha-mandapa* has been replaced. Lime-concreting and pointing wherever necessary have been attended to.

225. VISHNUDOL, SIBSAGAR, DISTRICT SIBSAGAR

During this year, the work of plastering and pointing of outer walls of the temple was attended to. Repairing and plinth protection measures have been undertaken.

226. BARDOL TEMPLE, BISHWANATHGHAT, DISTRICT TEZPUR

Plastering of the outer side of the temple wall and pointing, lime-concreting, etc., have been done, wherever necessary.

227. MOUND AND RUINS, DAH PARBATIYA, DISTRICT TEZPUR

The work of underpinning the missing bricks, lime concreting, pointing, earth filling and plinth protection measures have been undertaken.

TRIPURA

228. SCULPTURAL, RELIEF, UNAKOTI, DISTRICT NORTH TRIPURA

The cracks in rock sculptures have been treated by filling. The pathways and approach roads have been improved.

229. CHATURDASA DEVTA TEMPLE, UDAIPUR, DISTRICT SOUTH TRIPURA

The decayed lime-concrete, plaster and pointing have been replaced. Iron grill doors have been provided to the main temple. A brick pathway was also provided.

230. BHUBANESVARI TEMPLE, UDAIPUR, DISTRICT SOUTH TRIPURA

In this year, besides taking measures to protect the plinth of the temple, lime-concreting, fencing, repairing of brick-works have been undertaken.

231. GROUP OF TEMPLES, GUNAVATI, DISTRICT UDAIPUR

During the period under review, repairs to the decorative works, pointing, lime-concreting, wherever required, were attended to. Brick pathways and iron doors have been provided at the entrance *of the garbhagriha.*

ANDHRA PRADESH

232. DODDESVARA TEMPLE AND OTHER STRUCTURES, HEMAVATI, DISTRICT ANANTAPUR

The weather proof course over the temple was provided to stop seepage of water besides refixing of ancient water outlets, repairing the doors, reconstruction of collapsed portion of compound-wall, underpinning and strengthening of the brick wall have been taken up and completed.

233. FORT-WALL AND RAMA'S BASTION, PENUKONDA, DISTRICT ANANTAPUR

The remaning work of reconstruction of the collapsed portion of the fort-wall and fixing of iron grills in the openings of Rama's Bastion were taken up and completed.

234. SHRI VIRBHADRASVAMY TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR

The works of removal and relaying of weather Proof course over the roofs of western portion of cloister *mandapa* and northern side cloister

mandapa and resetting of *chajja-stone* members of western portion of cloister *mandapa* were completed.

235. INNER FORT-WALL AT RAJA MAHAL, CHANDRAGIRI FORT, DISTRICT CHITTOOR

Reconstruction of the collapsed portion of inner fortification wall at Raja Mahal/ room with available material is in progress.

236. PALLAVA MUDIA MAHADEVA TEMPLE, KALKADA, DISTRICT CHITTOOR

After removing the damaged barbed-wire fencing around the protected area, a new fencing was provided by constructing a low level stone masonry wall fixed with diamond mesh frames.

237. RAJA RAJESHVARI TEMPLE-COMPLEX, DISTRICT CHITTOOR

The collapsed stone members of exposed *adhishthana* of the temple have been refixed in their original position and the debris in the entire area has been cleared to drain out the rain-water from the temple-complex.

238. TANK AND ANJANEYASVAMY TEMPLE, GURRAMKONDA FORT, DISTRICT CHITTOOR

The collapsed stone of the monastery revetment of the ancient tank has been reset to its original position and the same was re-pointed. A barbed-wire fencing has been provided around the small *mandapa* of Anjaneyasvamy Temple.

239. GANDIKOTA FORT, GANDIKOTA, DISTRICT CUDDAPAH

The collapsed portion of the fortification wall has been reset as per original and the adjacent arched entrance has been strengthened by underpining, pointing and grouting.

240. SIDDAVATTAM FORT, SIDDAVATTAM, DISTRICT CUDDAPAH

The damaged walls of mosque and Naqar Khana were repaired by attending to the works of clearing the vegetational growth over the walls, reconstructing the fallen and missing portions, removing decayed lime-plaster and replastering the same including watertightening the top of the walls by laying concrete. The floor inside the mosque was also relaid. The undulated and disturbed stones of the basement around the mosque were removed and reset to their original position.The undulated and disturbed steps to Naqar Khana were removed and reset to their original position. The veneering stones of the bulged-out walls of the Siva Temple were removed and reset after underpinning its brick core with hydrated lime-mortar.

241. SRI KODANDARAMASVAMY TEMPLE, VONTIMITTA, DISTRICT CUDDAPAH

Scaffolding was erected around the eastern *gopura* of the temple for documenting the condition of the facade with its stucco figures for preparing the drawings and taking the photographs to prepare estimate for major repairs

242. BUDDHIST REMAINS AND ROCK-CUT CAVES, KAPAVARAM, DISTRICT EAST GODAVARI

The monument was repaired by attending to the watertightening the caves, strengthening the brick structures, repairs to the stone steps from the bottom of the hillock to the cave on the summit and providing barbed-wire fencing on the frontage of the cave. The work has been completed.

243. BHAVANARAYANASVAMY TEMPLE, BAPATLA, DISTRICT GUNTUR

The debris inside the temple-complex has been cleared and a channel was provided to drain out the

rain-water. The disturbed stone flooring in the main temple was removed and relaid. The *sikhara* was replastered after removing the decayed plaster and the stucco figures of the *sikhara* were mended. The damaged electrification was repaired.

244. KAPOTESVARASVAMY TEMPLE, CHEJERLA, DISTRICT GUNTUR

The ongoing work of reconstruction of the collapsed *mandapa* at the entrance of the temple was completed and new coping was provided over the inner *prakara-wall* in place of the damaged one to stop ingress of rain-water.

245. MAHASTUPA, AMARAVATI, DISTRICT GUNTUR

On the southern side of Mahastupa, the damaged barbed-wire facing was removed and a low level stone masonry wall was built and G.I.diamond mesh frames were fixed over it to enclosed the protected area.

246. AFRICAN BODY GUARD' CHAMBERS, GOLKONDA FORT, DISTRICT HYDERABAD

These huge arched structures are being repaired by attending to the restoration of stucco work, strengthening of the stone arches by re-pointing, replastering Body Guard's Chamber including reflooring. The work is in progress.

247. CAMEL STABLE, GOLKONDA FORT, DISTRICT HYDERABAD

The removal of accumulated debris over the roof of the camel stable is being carried out to expose the ancient roof garden, its fountain and channels etc.

248. DARBAR HALL, GOLKONDA FORT, DISTRICT HYDERABAD

The ongoing work of providing stone pitching around Darbar hall, relaying of damaged flooring in the main hall at the second floor and providing plastering on the open terrace are in progress.

249. SOUTHERN CYCLOPEAN WALL ABUTTING RANI MAHAL-COMPLEX, GOLKONDA FORT, DISTRICT HYDERABAD

The reconstruction of collapsed portion of the inner fort-wall on the southern side abutting the Zanana enclosure is being attended to.

250. AKKANNA MADANNA CAVES, VIJAYAWADA, DISTRICT KRISHNA

A new bore-well was drilled in the protected area to improve the environs. The cracked and damaged portion of the roof of the cave was cleaned and the work of relaying of weather proof coats over it is in progress.

251. BUDDHIST REMAINS, MUNAGACHERLA, DISTRICT KRISHNA

Fencing of the protected area using concrete posts and barbed-wire is in progress to stop encroachments.

252. ASOKEN ROCK-EDICT AND CHALUKYAN INSCRIPTION, RAJULAMANDAGIRI, DISTRICT KURNOOL

A barbed-wire fencing has been provided around the rock boulder having inscription, to save further damage.

253. KONDAREDDI BURJ, KURNOOL, DISTRICT KURNOOL

A stone-apron has been provided all around the main structure. Repairs to brick battlement on the top and refixing of grill fencing after removing the damaged ones are in progress

254. BHIMESVARASVAMY TEMPLE, SATYAVOLU, DISTRICT PRAKASAM

The reconstruction of dismantled temple is completed in all respects.

255. BHIMESVARASVAMY TEMPLE, SRIMUKHALINGAN, DISTRICT SRIKAKULAN

The leaky roof is being removed for relaying fresh W.P.C. and consolidation of *sikhara* by grouting and re-pointing is in progress.

256. BUDDHIST REMAINS, KOTTURU, DISTRICT VISHAKHAPATNAM

Providing barbed-wire fencing with prefabricated concrete post to stop encroachment is in progress.

257. BUDDHIST REMAINS, SALIHUNDAM, DISTRICT SRIKAKULAM

A barbed-wire fencing was provided around the protected area using stone post.

258. BUDDHIST REMAINS, BOJJANAKONDA, SANKARAM, DISTRICT VISHAKHAPATNAM

Resetting of the weathered and deteriorated portion and reconstruction of certain missing portions were taken up. Also the huge stone stupa is being repaired by resetting of disturbed brick structures around the stupa.

259. RAMAPPA TEMPLE, PALAMPET, DISTRICT WARANGAL

The disturbed portion of the wall on the south-east corner of the temple was dismantled and reconstruction of the same over a new foundation is in progress.

260. THOUSAND PILLARED TEMPLE, HANUMAKONDA, DISTRICT WARANGAL

The disturbed portion of the platform *(pradakshinapatha)* from north-east corner of Vishnu Shrine to north-east corner of Surya Shrine was dismantled and resetting of the same over a new concrete foundation is in progress. The wall of the main structure was also strengthened by underpinning.

KARNATAKA

261. RANGEEN MAHAL, BIDAR FORT, DISTRICT BIDAR

The debris was cleared inside the Rangeen Mahal to expose the buried cisterns, channels and foundations. Also the lime-wash over the intricate cut-plaster work was removed.

JAIPUR CIRCLE

RAJASTHAN

262. ANASAGAR BANDH, AJMER, DISTRICT AJMER

Mercury lights have been installed near Marble Pavilions and balustrade for better lighting arrangements for watch and ward during the night. Dismantling of the old damaged concrete pathway and relaying of the same have been done.

263. BADSHAHI HAVELI, AJMER, DISTRICT AJMER

Dismantling of the old, damaged concrete flooring and relaying of the fresh lime-cement concrete have been done. Replastering of the damaged portions of wall and roof has also been carried out after dismantling the worn-out plaster.

264. ANCIENT SITE, BHANGARH, DISTRICT AJMER

Repairs to the south side buried shops (41 to 60) were carried out by way of R.R.masonry, sunk pointing of the repaired walls, dismantling the dead and decayed lime-cement-concrete flooring and plastering over the freshly laid floor.

South side fortification wall upto the fourth bastion was exposed and repairs carried out with R.R. masonry and sunk pointing.

Northside buried fortification wall near Hanuman Gate was exposed and the repairing of fallen and broken portions by R.R. masonry and sunk pointing the wall faces have been done.

Earth work cutting and filling for preparation of subgrade of the pathway from Gopinath to Somesvara Temple and construction of the pathway in R. R. masonry are in progress.

Modon-ki-Haveli has been provided with a stone pathway and joined to the main pathway between the northern and the southern bazars. The work of exposing the buried structures of Modon-ki-Haveli by removing the debris from inside, is in progress.

265. SIVA TEMPLE, NEELAKANTHA, DISTRICT ALWAR

Special repairs to the temple is being done by dismantling the loose R.R. masonry of plinth platform and reconstruction of the dismantled and fallen R.R. masonry of the platform.

The buried structure of the temple platform was exposed.

266. DIG PALACE, DIG, DISTRICT BHARATPUR

Dismantling of the dislodged portion of structures near the eastern gate, reconstruction of the same in R.R. masonry and replastering of the damaged portions have been done.

For providing drinking water facilities to the visitors, bore-well and G.l.pipe fittings have been installed.

In Hardev Bhavan, replastering on the western side walls and relaying of lime-cement-concrete for flooring have been carried out.

Replastering on the western side walls and relaying of lime-cement-concrete for flooring of Singh Pol have been done. Besides, painting of doors and windows of the Bhavans is in progress.

267. FORT, BAYANA, DISTRICT BHARATPUR

Dismantling of old, damaged stone pathway leading to the fort, from the base upto the first gate and restoration of the same have been carried out.

268. FORT, BHARATPUR, DISTRICT BHARATPUR

Eradication of vegetation, dismantling of old, decayed plaster work, underpinning the masonry besides replastering have been done on the approach bridges on both the sides and Chowburja Gate.

Eradication of vegetation, path repairs with R.R. masonry and sunk pointing are being carried out for fort-wall from Chowburja to Asthadhatu Gate.

269. FORT, CHITTAUR, DISTRICT CHITTAURGARH

Repair and restoration of the R.R. masonry wall for parking area near Vijaya Stambha are being carried out by way of dismantling the old bulged-out wall, reconstruction of the same and spreading of *murram* in the parking area. Stone approach road from Vijaya Stambha to Samidhesvara Temple is being provided by laying stone slabs.

270. BAORI, ABANERI, DISTRICT DAUSA

Replastering of the cells after dismantling the dead and decayed plaster has been carried out.

271. FORT, BHATNER, DISTRICT HANUMANGARH

Repairs to the decayed patches of brick masonry of the fortification wall and bastions (10 and 49 to 51)

have been taken up as per the original by using the old and new bricks.

272. JAMA MASJID, AMBER, DISTRICT JAIPUR

To prevent encroachment, a boundary-wall in R. R. masonry has been provided. Replastering has been done after dismantling the damaged and decayed plaster at places in the Masjid.

273. PUNDRIK-JI-KI-HAVELI, BRAHMPURI,JAIPUR

The work of removing the dead and decayed plaster and replastering the same, is in progress.

274. FORT, JAISALMER, DISTRICT JAISALMER

Special repairs to a portion of lower fortification wall is in progress by dismantling the old, bulged and out-of-plumb fortification wall, sorting out the serviceable material and reconstruction of the wall as per the original pattern.

275. TEMPLE, FORT-WALL AND STATUE, DARA, DISTRICT KOTA

Refrxing of missing *chhajja* stones, RR masonry and replastering of the walls of the structures inside Shikargah have been done.

276. FORT, KUMBHALGARH, DISTRICT RAJSAMAND

Doors and windows of Badal Mahal, wherever missing have been replaced with new ones as per the original and refixed in position. Repairing of wooden windows and doors, cleaning of old glass-panes, replacing missing and broken glass panes with new ones and painting of woodwork of doors and windows have been done for proper preservation.

For the visitors, approach roads from Bhairon Pol to Nimbhu Pol and from Nimbhu Pol to Tara Burj have been provided in R.R. masonry.

Dismantling of the bulged-out and damaged masonry support wall of the platform near Ram Pol, stacking of serviceable material and reconstruction of the platform have been done. Approach road in R.R. stone masonry, from Ram Pol to Bedi Temple has been provided.

In order to provide parking facility for tourist vehicles, construction of parking area opposite Bedi Temple is in progress in R.R. masonry.

277. FORT, RANTHAMBHOR, DISTRICT SAWAI MADHOPLR

Dismantling of old and worn-out pathway from Naulakha Gate to Supari Mahal, damaged and loose portions of fortification wall and restoration of the pathway and the fortification wall with R.R. masonry have been undertaken.

Damaged and missing portions of R.R. masonry wall of Padamla Tank have been restored as per the original.

In order to provide approach between different monuments inside the fort, construction of stone pathway in RR masonry from Padamla Tank towards Ganesh Temple and from the tomb towards Badal Mahal has been made. The construction of pathway from Andheri Gate to Hamir Palace is also in progress.

Repairs and restoration of the fallen portions of the masonry walls of Rani Talab have been carried out in R.R. masonry.

278. SAS BAHU TEMPLE, NAGDA, DISTRICT UDAIPUR

Besides resetting of the out-of-plumb and dislodged portions of the *sikhara,* reconstruction of some of its missing portions and underpinning of brick *sikhara* have been taken up as per the original (pl. XCVIII).

Plate XCVIII



A



B

Nagda, Bahu Temple, sikhara : A, *before and* B, *after conservation*

LUCKNOW CIRCLE

UTTAR PRADESH

279. TOMB AND COMPOUND-WALL, KHUSHRUA BAGH, DISTRICT ALLAHABAD

Rusted Iron Gate, railing of the main gate and fencing of Khushru Bagh have been repaired and painted. Protection and cultural notice boards have been fixed.

Decayed and damaged metal *jali* of the tomb of Khushru's mother has also been replaced.

Plastering and pointing with combination mortar wherever necessary, have been executed during this year. Decayed and dead concrete floor besides roof terraces have been reconcreted.

280. NILAKANTHA TEMPLE, KALINJAR FORT, ,DISTRICT BANDA

Worn-out and decayed stones of the boundary wall have been replaced with new ones besides attending to the pointing with combination mortar.

The lime-plastering of the side verandah and ceiling of Raja Man Singh's Palace, has been completed after removing the dead and decayed lime-plaster.

281. BAM KHANAM'S TOMB, DISTRICT FAIZABAD

The decayed and flaked out plaster of the walls, vaulted ceiling plaster, geometrical moulded plaster, on the northern facade of the tomb have been repaired including the richly moulded designs.

282. PANCH MAHAL, JHANSI FORT, DISTRICT JHANSI

The wooden doorways have been repaired.

283. RANI MAHAL, JHANSI FORT, DISTRICT JHANSI

A fresh lime-plaster was provided on the roof terrace of upper storey towards the front side, after removing the dead and decayed lime-plaster.

284. ANCIENT BRICK TEMPLE, BHITARGAON, DISTRICT KANPUR

The top of the *sikhara* has been watertightened.

285. GHOSHITARAMA VIHARA, KAUSAMBI, DISTRICT KAUSAMBI

The work of resetting the ancient bricks in position, pointing of open joints and laying of concrete shell below the structure have been completed.

286. DASAVATARA TEMPLE, DEOGARH, DISTRICT LALITPUR

The damaged staircase of the main temple has been replaced with red polished slab stones, matching the original. The flooring of the main temple and the surrounding areas have been repaired and flag stones have been provided. The eastern side boundary-wall of Dasavatara Temple has been replaced with a fresh one and iron grill has been provided.

287. KURAIYABIR TEMPLE, KUCHDON, DISTRICT LALITPUR

A retaining wall has been constructed by laying slatestones to prevent the temple-complex from south-west flowing *nala.*

288. ALAM BAGH CEMETERY, LUCKNOW, DISTRICT LUCKNOW

Barbed-wire fencing along with angle iron post has been fixed around the cemetery. A protection notice board and an iron grill gate at the entrance, have been provided.

289. ASAFI MOSQUE, LUCKNOW, DISTRICT LUCKNOW

Weathered and worn-out thick lime-plaster of middle dome has been removed and replastered with

thick concrete mortar which has been retained with the help of iron dowels, having mouldings and inverted waterleaf design, matching the original.

290. ASAF-UD-DAULA'S IMAMBARA, LUCKNOW, DISTRICT LUCKNOW

The damaged flooring of middle chamber of *baoli* (stepped-well) has been replaced with lime concrete. The side walls of the galleries have been replastered.

Glazed earthen pinnacles (40 cm) have been fixed on the apex of miniature domes over parapet-walls.

The miniature domes as well as the parapet-walls adjoining Asafi Mosque, in the southern wing, have been restored as per the original.

291. DILKUSHA PALACE, LUCKNOW, DISTRICT LUCKNOW

The work of toilet block has been completed by laying tiles on the floor, providing water tank, sanitary fittings, white washing, colouring besides constructing staircase and partition wall. A pathway from the northern side to north-east have been provided.

The plinth has been protected with lime-concrete and the pathway around the north-east has been provided.

292. JAMA MASJID, LUCKNOW, DISTRICT LUCKNOW

The front courtyard has been reconcreted and lime-plastered to match the existing surface.

The fallen parapet, bearing rich decorations, has been restored.

The bulged-out steps towards the northeastern side have been reset after removing roots of the trees.

The adjoining large water tank has also been replastered.

293. MAUSOLEUM OF AMJAD ALI SHAH, LUCKNOW, DISTRICT LUCKNOW

The work of repairing of facade of Amjad Ali Shah's tomb including the reproduction of rich mouldings has been completed. The side walls of the platform have been repaired with lime-plaster coating.

In front of the main mausoleum, brick pathway has been provided.

294. NEIL'S GATE, LUCKNOW, DISTRICT LUCKNOW

The roof terrace of Neil's Gateway has been replastered with fresh lime-concrete after removing the dead and decayed plaster. The floor of the gate has also been concreted with cement. Provision has been made for plinth protection and protection notice board.

Open drain in front of the gateway has been covered with R.C.C.

295. RESIDENCY BUILDING, LUCKNOW, DISTRICT LUCKNOW

During the year, an approach road in lime-concrete has been provided, leading to Treasury Building. Repairs by way of underpinning, plastering the walls of the main structure and lime-concreting of the floor have been attended to.

Approach road to Dr. Fayrer's House and staircases in *lakhauri* bricks have been constructed. The work of underpinning, pointing including inside flooring has been completed.

In continuation of the last year's *(1995-96,* p. 179) work, decayed and damaged portico of Model Room (main Residency Building) has been restored carefully with the help of required size Sal

beams (6.85x0.32x0.40 m section). In addition to this, much decorated corniced parapet wall in *lakhauri* bricks has been constructed as per the original.

The western side compound-wall of Residency has been taken up for repairs.

296. SIKANDAR BAGH, LUCKNOW, DISTRICT LUCKNOW

The ancient wall of Sikandar Bagh has been repaired with brick and lime-mortar. Plinth protection in lime-concrete has also been made.

Pathway towards Rana Pratap Marg has been pointed afresh with cement and fine sand-mortar.

297. TOMB OF GHAZI-UD-DEN HAIDER (SHAHNAJAF), LUCKNOW, DISTRICT LUCKNOW

Inside the main tomb of Shahnajaf, decayed lime-plaster has been replaced by simple and richly carved plaster in lime-mortar.

298. TOMB OF SAADAT ALI KHAN, LUCKNOW, DISTRICT LUCKNOW

The missing and badly damaged stone slabs of the pathway from the tomb of Saadat Ali towards Musheer Zadi's tomb have been replaced by new ones and the existing stones have been reset. The base has been repaired with lime-concrete in addition to pointing in combination mortar wherever required.

The damaged and decorated facade of the first floor in the eastern wing of Saadat Ali's Tomb has been repaired with bricks in lime-mortar and by reproducing the moulded carved plaster.

Facade of the western and the southwestern corners of Saadat Ali's Tomb has been colour matched after clearing moss and lichen from the surface.

299. LAKE OF KIRAT SAGAR, DISTRICT MAHOBA

Repairs to the Ghats/steps of Kirat Sagar have been taken up. Dismantling and resetting of granite staircases have been completed maintaining the consistency in colour and texture of the adjacent area.

300. SENAPATI MAHAL, KULPAHAR, DISTRICT MAHOBA

The work of watertightening the top floor as well as the open courtyard as per the original has been carried out. Lime-plastering with *surkhi* and sand on the top floor and the walls of the western side has also been provided, matching the original.

301. SUN TEMPLE, RAHALIYA, DISTRICT MAHOBA

An apron around the temple has been constructed to protect the plinth from rain-water. The gateway of the southern side of this temple pathway has been constructed with stone masonry.

In the northern side of the main temple, plinth of the smaller temple has been reset, matching the original.

302. EXCAVATED SITE, PIPRAHWA, DISTRICT SIDDHARTHA NAGAR

The work of resetting the ancient bricks in position, pointing open joints and watertightening of the eastern monastery has been completed.

303. EXCAVATED SITE, SAHET, SRAVASTI, DISTRICT SRAVASTI

Road and pathway at Sahet have been constructed by laying stone grit, concrete and bricks. The pathway has been concreted with lime-brick edging.

The structural repairs to the excavated tank have been undertaken by way of underpinning, pointing, resetting and watertightening with the help of combination mortar as per the original.

304. BRICK TEMPLES, TELIGARHI (BHAGUPUR), MUSAFIRKHANA, DISTRICT SULTANPUR

A boundary-wall along with barbed-wire fencing in angle iron post has been provided around the site.

MINI CIRCLE

GOA

305. MAHADEVA TEMPLE, KURDI

The area around the temple, at a distance of 20 km away from the original site, was provided with a barbed-wire fencing.

306. BASILICA OF BOM JESUS, VELHA GOA

The northern part of the quadrangle roof had sunk due to the decayed beams and rafters. All the affected beams and rafters were removed and the age old tiles were also replaced with the new ones. The decayed plaster of the northern wall was treated with fresh plaster to stop penetration of water.

307. CHURCH OF ST. ASSISI, VELHA GOA

The backside of decayed panel paintings on the north and the south were dismantled, treated with chemicals, mounted against marine plywood and refixed in their original position. The decayed wooden side panels were also recarved.

308. CHURCH OF ST. CAJETAN, VELHA GOA

Moss and lichen on the exterior surface of the church of St. Cajetan, was rubbed off and a fresh coat of snowcem paint was applied for a better look to replace fallen and dead look. Patch plastering was undertaken wherever required to replace fallen and dead plaster. The interior of the church was cleaned and whitewashed. The decayed wooden windows were replaced by new ones and the same was covered with wire mesh to ward off birds. As the floor was looking shabby due to constant treading of visitors, it was applied with redoxide.

309. UPPER FORT, AGUADA, VELHA GOA

The rank vegetation grown over the wall and tree roots that had damaged the fort-wall, were removed. In order to strengthen the wall, the eastern and northern sides were pointed. The cavities and cracks in the mother rock were also filled in with combination mortar.

PATNA CIRCLE

BIHAR

310. EXCAVATED REMAINS, VIKRAMASILA, ANTICHAK, DISTRICT BHAGALPUR

During the year under review, the southern portion of the library-complex has been conserved and partly restored as per the original, using lime-*surkhi* mortar and special size fresh bricks. Reconditioning of ancient pathway between the monastery and the library-complex has been completed. Upper terrace and the wall of the central shrine have also been consolidated by resetting, pointing and watertightening of top courses.

311. EXCAVATED REMAINS, KOLHUA, DISTRICT MUZAFFARPUR

The base circle of the main stupa has been conserved with special size fresh bricks and lime-*surkhi* mortar in accordance with the original. Recently exposed remains of the votive stupas have also been consolidated by underpinning, resetting, pointing and watertightening of top courses. Restoration of the recently exposed tank (Markat Hrid) and the Kutagarasala-complex have been

continued with special size fresh bricks and lime-*surkhi* mortar.

312. EXCAVATED REMAINS, NALANDA, DISTRICT NALANDA

The consolidation of decayed portions in Monastery 1A and IB has been done by resetting, underpinning, pointing and watertightening of the structure using *Mme-surkhi* mortar and special size fresh bricks, as per original. The votive stupas to the north and west of the Temple 3 have been conserved in the same pattern. The pathway leading to the Temple 2 has been reconditioned with bricks on edge.

313. BRICK STRUCTURES, RAJGIR, DISTRICT NALANDA

The brick structure added atop the Sonbhandar Caves has been consolidated by way of pointing and watertightening of top courses with *Mme-surkhi* mortar. The brick structure at Gridhrakuta hill has been conserved by watertightening and pointing with *Mme-surkhi* mortar.

314. EXCAVATED REMAINS, KUMRAHAR, DISTRICT PATNA

The resetting, pointing and watertightening with special bricks and *lime-surkhi* mortar for preservation of Arogya-vihara monastery have been completed. A retaining wall has also been provided to check the inflow of rain-water into the monastery.

315. MIR ASHRAF'S MOSQUE, CHOWK SHIKARPUR, PATNA CITY, DISTRICT PATNA

The decayed plaster of the wall and the domes, both interior and exterior, has been removed and replastered with *lime-surkhi* mortar as per the original. Fresh bricks have been laid in the courtyard and the ablution tank has been revived.

316. TOMB OF MAKHDUM SHAH MANERI, MANER, DISTRICT PATNA

In order to check the percolation of rain-water, the decayed plaster of the dome has been removed and replastered with *lime-surkhi* mortar, matching the original. Damaged portions of the northern arm of the great tank, adjacent to the tomb, have been preserved by resetting bricks and plaster with *Mme-surkhi* mortar in accordance with the original.

317. TOMB OF SHER SHAH SURI, SASARAM, DISTRICT ROHTAS

The restoration of inlet drain has been completed with the help of ashlar masonry as per the original. Dilapidated platform, to the east of the entrance gate, has been consolidated by pointing, resetting and watertightening.

UTTAR PRADESH

318. OLD FORT, JAUNPUR, DISTRICT JAUNPUR

Restoration of the western fortification has been continued with ashlar stone on the outer face, bricks on the inner face and coursed rubble in the core of the wall as per the original structure.

319. EXCAVATED REMAINS, KUSHINAGAR, DISTRICT PADRAUNA

Dilapidated subsidiary structures and votive stupas around Nirvana Temple have been conserved by pointing, resetting and watertightening with the help of lime-*surkhi* mortar and special size fresh bricks matching the original.

320. ALAMGIR MOSQUE, DHARAHRA, DISTRICT VARANASI

Cracks developed in the top as well as in the wall of the mosque have been pointed by grouting the core with cement and filling up the face with lime-*surkhi* mortar, matching the original.

321. CHOUKHANDI STUPA, SARNATH, DISTRICT VARANASI

Southern arm of the stupa has been exposed by scientific clearance and partly restored with lime-*surkhi* mortar and special size fresh bricks in accordance with the original.

322. EXCAVATED REMAINS, SARNATH, DISTRICT VARANASI

The underground old choked drains have been repaired, restored and cleaned completely in order to revive the same. Decayed portions of votive stupas and subsidiary structures to the north and west of the Mulagandha-kuti have been consolidated by way of resetting, pointing and watertightening with the help of lime-*surkhi* mortar.

SRINAGAR CIRCLE

JAMMU AND KASHMIR

323. MUGHAL ARCADE AND SPRING, VERINAG, DISTRICT ANANTNAG

The work of providing grill fencing mounted over the edge of the octagonal basin of the spring has been undertaken partly.

324. FORT, AKHNUR, DISTRICT JAMMU

In order to check further erosion on the back of the fort, construction of retaining wall was taken up. The work is in progress. Cracks in the buttress-wall lying adjacent to the retaining wall, were repaired and the joints were also pointed.

325. SIVA TEMPLE, BILLAWAR, DISTRICT KATHUA

The flight of steps on the front side was repaired as per the original. The missing courses of *mandapa*-wall on either side of the landing of steps, were provided. A portion of the missing platform of the temple was also repaired.

326. TRILOCHANATH TEMPLE, MAHADERA, DISTRICT KATHUA

The newly acquired area was fenced.

327. BUDDHIST MONASTERIES, ALCHI, DISTRICT LEH

In order to stop percolation of rain/snow-water into the shrines, the rooftops were watertightened by removing the decayed earth packing and replacing with fresh earth and plastering. A flag-stone pathway around the *chortens* were also laid. Damaged and loose mud-plaster on the walls of the shrines were also raked out and replastered.

328. BUDDHIST MONASTERIES, HEMIS, DISTRICT LEH

The leaking roof of the Guru Lhakhang was dismantled along with the parapet-wall. The decayed wooden poles, twigs and beams etc. were replaced by new ones. Mud-concrete was laid and the top watertightened. The parapet-wall was restored.

329. BUDDHIST MONASTERIES, LAMAYURU, DISTRICT LEH

A retaining wall was provided on the south side of the monastery to stop erosion of soil. The damaged *chortens* were repaired besides restoring the damaged parapet-walls around the *chortens,* as per the original.

330. BUDDHIST MONASTERIES, PHYANG, DISTRICT LEH

The damaged roof of the skylights of Gonkhang and Tsog Khang were watertightened by reducing the load of earth packing and replacing the decayed wooden members to support the shrine. The outer walls were plastered. A retaining wall on the west was also constructed.

331. SHEY PALACE, SHEY, DISTRICT LEH

The part of the damaged and out-of-plumb roof of the palace have been dismantled. The reconstruction of the same is in progress. The front portion of the outer wall of the palace was restored with rubble stone

in mud-mortar. The ceiling of the rooms in ground floor and basement were relaid after replacing the decayed wooden members.

332. BUDDHIST MONASTERIES, THICKSEY, DISTRICT LEH

Repairs to the damaged roof of Dukhang Karmo along with parapet-wall was completed and the top watertightened. The stone masonry wall on the back side was also repaired and restored.

333. ANCIENT STUPA, TISSERU, DISTRICT LEH

The damaged mud-brick retaining wall on south side of the stupa was repaired with new ones, as per the original.

334. PARIMAHAL, CHASMASHAHI, DISTRICT SRINAGAR

The worn-out and weathered lime-cement-concrete over the top main gate, *baradari* and retaining wall of the third terrace were removed and reconcreted. The damaged plaster of the arches were dismantled and restored as per the original. The water reservoir was also repaired and the joints pointed.

335. SIVA TEMPLE, PANDRETHAN, DISTRICT SRINAGAR

The side walls of drains of masonry tank were repaired. The silt of the pond was removed. Recess pointing to the main shrine was also attended to.

336. TOMB OF ZAIN-UL ABDIN'S MOTHER, ZAINA KADAL, DISTRICT SRINAGAR

The damaged and pulverized portions of brick masonry of the circular and moulded courses of the base of the domes were restored as per the original.

337. GROUP OF TEMPLES, KIRAMCHI, DISTRICT UDHAMPUR

Construction of retaining wall and dwarf wall on the western side and south-west corner was completed. Angle-iron posts were also fixed for fencing the area.

338. DEVI BHAGAVATI TEMPLE, MANWAL, DISTRICT UDHAMPUR

The flag-stone pathway over base concrete at the lower terrace was laid.

339. DERA TEMPLE, MANWAL, DISTRICT UDHAMPUR

The dislodged stones of the lower half of *sikhara* on the east were dismantled and reset. The niches were repaired and joints of the stones were recess pointed in toned lime-mortar. Voids were filled in with chips mixed with mortar.

340. KALA DERA TEMPLE-1, MANWAL, DISTRICT UDHAMPUR

With the acquisition of more area for development, steps have been initiated to provide barbed-wire fencing, mounted over dwarf wall on the western side. The work is in progress.

341. KALA DERA TEMPLE-II, MANWAL, DISTRICT UDHAMPUR

Tilted and out-of-plumb stone veneering of the sanctum and *antarala* was dismantled and reset in ashlar stone masonry. The stone-block ceiling was also restored as per the original. The crumbled inner side walls of the sanctum and miniature shrines were also reset

342. FORT, RAMNAGAR, DISTRICT UDHAMPUR

The cracks and voids developed in the middle bastion supporting the inner fortification on the eastern and northern side were stitched in patches and the joints were pointed. The top of the fortification was watertightened. Flooring of the basement chambers of the corner bastions were relaid.

343. NAWA MAHAL, RAMNAGAR, DISTRICT UDHAMPUR

Reconstruction of the fallen bastion and walls of adjoining rooms and flight of steps was taken up and the work is in progress.

344. SHEESH MAHAL, RAMNAGAR, DISTRICT UDHAMPUR

To prevent seepage of water inside Sheesh Mahal and Rang Mahal, the rooftop was watertightened by raking out the pulverized plaster. The courtyard was also plastered, matching the original.

VADODARA CIRCLE

DAMAN AND DIU

345. CHURCH OF OUR LADY REMODIOS, MOTI DAMAN

The nave and aisle of the Church was in bad condition. The wooden roof with Mangalore tiles was sunken, which has been dismantled and reconstructed with new members as per the original. The wall was given distemper over cement primer after scraping, by removing dead plaster and providing new ones. The rotten wooden vaulted ceiling was dismantled and provided with new ones as per the original.

346. FORT AND INSIDE BUILDINGS, DIU

The worn-out and uneven stone flooring of gates and bastion near jetty have been removed and reset with new stones.Pointing to the ashlar stone masonry and plastering, etc.have also been attended to.

GUJARAT

347. ASTODIA GATE, AHMEDABAD, DISTRICT AHMEDABAD

Damaged and worn-out ashlar stone masonry have been dismantled and reset by providing new stones, after dressing, moulding, etc. as per the original including hearting masonry, to prevent further damage to the monument. The work is in progress.

348. BHADRA GATE AND TOWER, AHMEDABAD, DISTRICT AHMEDABAD

Few worn-out ashlar stones have been replaced with the new ones, after carefully chiselling out the damaged stone, as per the original.

349. QUTUB-UD-DIN'S MOSQUE, AHMEDABAD, DISTRICT AHMEDABAD

Due to weathering effect, some parts of the monuments have been damaged. The worn-out ashlar stone masonry have also been replaced as per the original.

350. DWARAKADHISH TEMPLE, DWARKA, DISTRICT JAMNAGAR

The worn-out ashlar stone masonry of the *sikhara* has been removed carefully and replaced with the new ones after dressing, moulding and carving as per the original (pl. XCIX). The joints have been filled up by pointing work and strengthening the masonry by grouting.

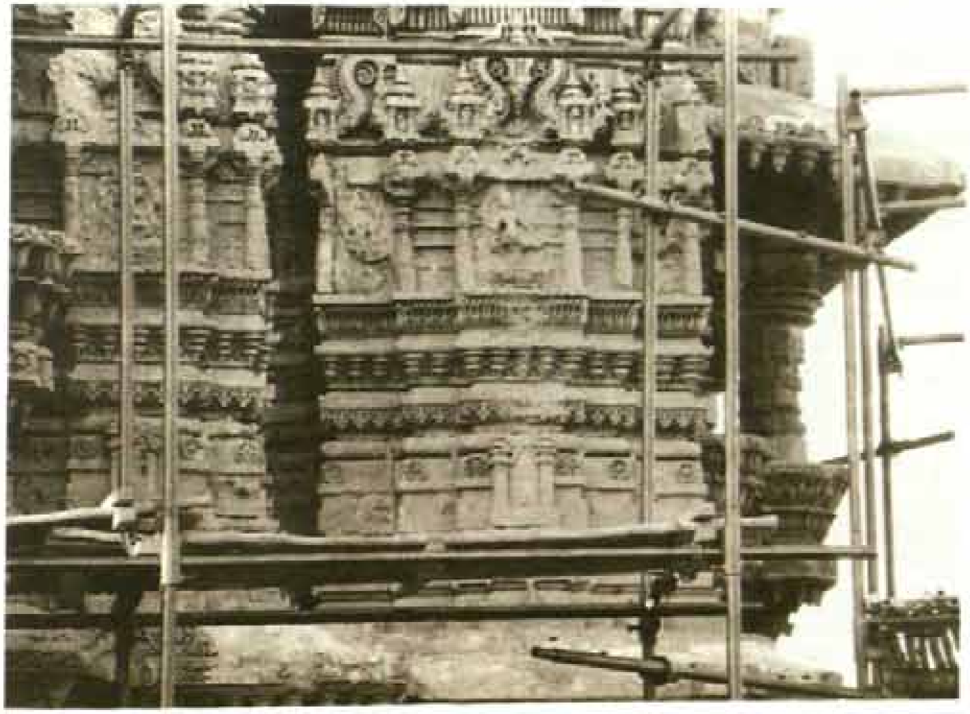
351. GOKESHVARA MAHADEVA TEMPLE, LOWRALI, DISTRICT JAMNAGAR

The worn-out ashlar stone masonry of the temple pillars, capitals, lintels, *kakshasana,* etc., have been dressed and carved as per the original.

352. SUN TEMPLE AND SURYA KUNDA, MODHERA, DISTRICT MAHESANA

The ashlar stone masonry steps along with niches which were sunken and decayed, have been dismantled and reset including providing hearting masonry as per the original.

Plate XCIX



A



B

Dwarka, Dwarakadhish Temple, sikhara : A, *before and*; B, *after conservation*

353. RANI-KI-VAV, PATAN, DISTRICT MAHESANA

The missing richly-carved ashlar stone masonry of the underground water structure has been reset after dressing and moulding including hearting masonry to retain the side embankment, as per the original. The work is in progress.

354. BHADRA GATE, PAVAGADH, DISTRICT PANCHMAHAL

The bulged-out ashlar stone masonry wall of Halol Gate near Burj (1), has been dismantled and reconstructed as per the original including hearting masonry.

355. CITADEL WALL, PAVAGADH, DISTRICT PANCHMAHAL

The ashlar stone masonry wall which was bulged-out due to water seepage and tree roots, has been dismantled and reconstructed as per the original including hearting masonry.

356. OLD ENGLISH TOMB, SURAT, DISTRICT SURAT

The damaged and dead lime-concrete of floor, dome, roof and plaster on walls, pillars, etc. have been removed carefully and redone as per the original including mouldings in plaster.

357. NAV LAKHA TEMPLE, SEJAKPUR, DISTRICT SURENDRANAGAR

The out-of-plumb, broken ashlar stones, pillar, capital, lintel, etc. have been dismantled carefully with the help of chain pulley block. The missing and broken ashlar stone members have been dressed, moulded and carved as per the original (pl. C) and kept ready for resetting. The work is in progress.

MONUMENTS MAINTAINED BY THE STATES

ANDHRA PRADESH

Archaeology and Museums, Government of Andhra Pradesh, Hyderabad, carried out conservation work in the following monuments.

358. GOPURA, RAMALINGESVARA TEMPLE, PALAKOL, DISTRICT WEST GODAVARI.

359. MANDAPA, SANKARASVAMY TEMPLE, KORIDENA, DISTRICT PRAKASAM.

ASSAM

During the period under review, the following monuments have been taken up for conservation by the Directorate of Archaeology, Government of Assam.

360. GHUGUA DOL DISTRICT DHEMAJI

Vegetation on the superstructure of the brick-temple has been removed. The temple-compound was fenced with goat-proof wire.

361. MOTHEJHAR TEMPLE RUINS, DISTRICT DHUBRI

The two sides of the temple were provided with brick pavement and a small garden was laid inside the campus.

362. SIVA TEMPLE, SONAI, DISTRICT CACHAR

The temple compound has been fenced with goat-proof wire nets. Brick masonry work of the *temple jagati* has been repaired.

363. RAUSH MONUMENT, GOALPARA, DISTRICT GOALPARA

A brick-apron has been laid around the monument besides renewing the *surkhi*-plaster of the dome. The hill slope has also been laid with grass-sods.

364. ASVAKRANTA DEVALAYA, DISTRICT KAMRUP

Brick ramparts on either side of the stairway has been repaired by brick-masonry. Besides, removing

Plate C



A



B

Sejakpur, Nav Lakha Temple : A,*before and* B, *during conservation*

the vegetation, R.C.C. benches have also been provided for the use of the visitors.

365. RUDRESVARA DEVALAYA, NORTH GUWAHATI, DISTRICT KAMRUP

The area around the temple was developed and a garden was laid.

366. BAGHARCHUKAR DOL, DISTRICT LAKHIMPUR

The temple was fenced with a goat-proof wire and treated for eradicating vegetational growth.

367. AKASHIGANGA, DISTRICT NAGAON

The R.C.C. fencing posts ravaged by wild elephants have been renewed besides making provision for pathways.

368. MIKIRATI RUINS, DABAKA, DISTRICT NAGAON

During the period under review, damaged R.C.C fencing posts have been replaced with new ones besides laying a pathway.

369. BILLESVARA DEVALAYA, BELSOR, DISTRICT NALBARI

The work of underpinning, relaying of lime-*surkhi* mortar in the outer walls and providing brick-masonry round the temple to check rain-water has been taken up by the State Government besides fencing the temple with a goat-proof wire.

370. GOLAGHAR, GARGAON, DISTRICT SIBSAGAR

Besides attending to the work of removing vegetation from the dome, it also provided a brick-masonry apron around the temple.

371. JAGADDHATRI DOL, KALUGAON, DISTRICT SIBSAGAR

During the period under review, the work of eradicating vegetation from the pitch-roofed *mandapa* including lime-concreting of the eroded portions, has been attended to. For the preservation of the structure, *surkhi*-plaster has also been provided.

372. SIVA TEMPLE, RUDRASAGAR, DISTRICT SIBSAGAR

In addition to the laying of a brick-pitched pathway, a tube-well was sunk in the temple-compound and the extrados of the temple *sikhara* was provided with fresh *surkhi*-plaster

KARNATAKA

The Department of Archaeology and Museums, Government of Karnataka, carried out conservation of the following monuments during the year.

373. VIRUPAKSHA TEMPLE, HAMPI, DISTRICT BELLARY

Annual repairs to the temple have been carried out.

374. SRI LAKSHMI NARASIMHASVAMI TEMPLE, BELAGERE, DISTRICT CHITRADURGA

Conservation work was done to repair the temple wall/pavement.

375. SURAL MUD PALACE, UDUPI, DISTRICT DAKSHINA KANNADA

The removing/ resetting of tiles, repairing of mud walls and wood works have been undertaken.

376. MANIKESVARA TEMPLE, SEDAM, DISTRICT GULBARGA

The walls, ceiling and pillars were chemically treated

377. VIRABHADRASVAMY TEMPLE, GULUR, BAGEPALLI, DISTRICT KOLAR

The work of resetting the veneering slabs of walls, beams and pillars has been done.

378. MOSQUE AT MARGANAKUNTE, BAGEPALLI, DISTRICT KOLAR

The walls and ceiling were reconstructed as per the original.

379. ANANTAPADMANABHA TEMPLE, HOSABHUDANUR, DISTRICT MANDYA

The resetting of wall, pillars, ceiling and Vimana of the temple was done.

380. MAHALINGESVARASVAMY TEMPLE, SANTEBACHANAHALLI, K.R. PET, DISTRICT MANDYA

The damaged walls, pillars, beams, ceiling and Vimana of the temple were reset.

381. SRIRANGAPATNA FORT, SRIRANGAPATNA, DISTRICT MANDYA

The work of removing vegetation and resetting of fort-wall has been carried out.

382. VENUGOPALASVAMY TEMPLE, THONNUR, PANDAVAPURA, DISTRICT MANDYA

Annual repairs to the temple were carried out.

383. KOPPALA FORT, KOPPALA, DISTRICT RAICHUR

Besides annual repairs, the fort-wall was provided with stone masonry wherever required.

384. SRILAKSHMIKANTHASVAMY TEMPLE, KALALE, NANJANGUD, DISTRICT MYSORE

The walls, beams, pillars and the idols were chemically treated.

385. SIVAPPANAYAKA PALACE, SHIMOGA, DISTRICT SHIMOGA

The annual repairs and maintenance of the garden in the palace-complex have been carried out.

386. VENKATARAMANASVAMY AND PADMAVATI TEMPLES, AKKIRAMAPURA, KORATGERE, DISTRICT TUMKUR

The work of laying floor and conservation of *maha-gopura,* vimana and compound-wall was undertaken.

387. KUMARARAMA TEMPLE, DODDAPALANAHALLI, KORATGERE, DISTRICT TUMKUR

Conservation of *mahadvara* was undertaken besides resetting of wall.

RAJASTHAN

388. MAIN GATE, AKBAR'S FORT, DISTRICT AJMER

The Department of Archaeology and Museums, Government of Rajasthan provided flood lights to the main gate. Under the National Service Scheme, the clearance work was also undertaken by the students of Subhash Schore Ganj.

X. ARCHAEOLOGICAL CHEMISTRY

ANDHRA PRADESH

1 .VIRABHADRASVAMY TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR

A suitable solvent system was evaluated to remove soot, dust, dirt and other accretions from the paintings on the ceiling of Somavara *mandapa* **and the main shrine of this temple. A** solvent system **having lower alcohols, cellosolve, butyl lactate** and **diacetone alcohol was found effective for chemical conservation of the paintings of this temple. At a few places, die toluene, turpentine oil and triethanol amine mixture was also used to remove hardened soot. An area of about 46.5 m^2 out of total painted area (169m^2) of the ceiling of Somavara** ***mandapa*** **and 10 m out of total painted area (146 m^2) in the main shrine have been chemically cleaned and preserved during the period under report.**

2. SHRI BHIMESVARA SVAMY TEMPLE, **DRAKSHARAMA**, DISTRICT EAST GODAVARI

In continuation of the previous year's **work** ***(1995-96,*** **p. 189), the remaining (61%) work, i.e., 654** m^2 **was taken up for** chemical treatment and preservation work this year. The fine stone sculptures were covered with moss, lichen, lime-wash and oil mark deposit. All these accretions were removed with a solution of ammonia and non-ionic detergent, mild alkali (sodium sesquicarbonate) and dilute acetic acid. The chemically treated area was given fungicidal coat of sodium pentachlorophenate followed by preservative coat after the surface was completely dried. The work is completed.

3.NAVA BRAHMA MAIN TEMPLE (BALA BRAHMESVARA SVAMY), ALAMPUR, DISTRICT MAHABOOBNAGAR

Of the total 1088 m^2 area, both interior and exterior of the temple, about 704 m^2 area was chemically treated with the help of chemicals like ammonia, teepol, acetic acid and oxalic acid to remove moss, lichen and lime-wash from the stone surface. After the surface was thoroughly flushed with water **to** remove accretions and chemicals used, the same was completely dried. The surface was treated with 1% solution of sodium pentachlorophenate as fungjcide and was allowed to dry. Finally, the stone surface was preserved with 2% solution of Acrypol P-876 clear solution, prepared in toluene.

[1]Information from: The Director (Science) of the Survey, Dehradun.

4.BUDDHIST REMAINS (EASTERN PORTION), SALIHUNDAM, DISTRICT SRIKAKULAM

The brick-wall structures, stupa and sculptures in the museum were treated with a solution of ammonia and teepol(3:l)for the removal of moss and lichen. The cleaned area was preserved with 3% Acrypol in toluene over the coating of 1% sodium pentachlorophenate. The work has been completed.

5. SRI MUKHALINGESVARA SVAMY TEMPLE, SRIMUKHALINGAM, DISTRICT SRIKAKULAM

Out of an estimated area of 2138 m^2 , an area of about 535 m^2 was chemically treated with the help of dilute ammonia, teepol and acetic acid solutions for removal of micro-biological growth, deposited dust and lime-wash from the stone surface of the temple. The cleaned dried surface was given fungicidal treatment and water soluble preservative coat with potassium methyl siliconate.

6.THOUSAND PILLARED TEMPLE, HANAMKONDA, DISTRICT WARANGAL

In continuation of the earlier work *(1994-95,* p. 137), the chemical treatment on the exterior stone surfaces of the remaining 170 m area of the temple was taken up. The vegetational growth like moss, lichen and lime-wash were removed by using dilute solutions of a.mmonia, teepol and acetic acid. The surface was treated with 1 % sodium pentachlorophenate solution and preserved with 2% solution of Acrypol P-876 in toluene. The work has been completed.

BIHAR

7. MONASTERY COMPLEX 1 (B), NALANDA, DISTRICT NALANDA

The chemical treatment work was carried out for removing the superficial accretions such as vegetational growths, dust, dirt, etc., by using aqueous solutions of ammonia and liquid detergent. In order to check the water percolation through capillary action, 3% solution of acrylic emulsion was applied. The cleaned surface was treated with 5% solution of santobrite and the surface was preserved with 4% solution of polymethyl methacrylate in toluene. The work has been completed.

8.GATEWAY STRUCTURE, SASARAM, DISTRICT ROHTAS

Superficial accretions such as moss, lichen, fungi, etc., were removed from stone-surface with aqueous solution of ammonia and non-ionic detergent. The black patches from the stone-surface at a number of places were removed with aqueous solution of oxalic acid. The cleaned surface was subjected to the fungicidal treatment with a solution of santobrite (5%), acrylic emulsion (3%) and polymethyl methacrylate (2%) in toluene. The work has been completed.

DAMAN AND DIU

9. DAMAN FORT, DAMAN

The chemical conservation work was executed on the outer side of the southern fort-wall which was covered with biological growth, embedded with dust, dirt, salts and bird's excreta. An aqueous solution of ammonia mixed with non-ionic detergent was used for the removal of these accretions with the help of nylon brushes. The cleaned surface was preserved with PMMA in toluene solution.

DELHI

10. HUMAYUN'S TOMB, NIZAMUDDIN, NEW DELHI

During the period under report, the three types of chemical treatment were done. The chemical treatment of marble surface was continued on the dome and extended on the marble graves and lower strips in the entrance chamber of the main central hall. In the first step, the marble surface was treated with dilute ammonia and teepol solution while in the

second step, it was treated with bentonite suspension paste applied with clay-pack method for the treatment of marble. The surface was thoroughly washed with distilled water. This method of clay-pack treatment was repeated to remove firmly adhered accretions of black patches.

The stone-surface of the drum was chemically treated with liquid ammonia and teepol solution applied with the soft nylon brushes and the micro-biological growth along with deposited dust, dirt was cleaned with the help of water. After the surface was completely dried, 2% solution of zinc-silicofluoride as fungicide was applied. The treated area was preserved with potassium methyl siliconate.

The chemical treatment of the lime-plastered areas of the entrance gate building, and booking office was undertaken by using bleaching powder method of lime-plaster cleaning. The treated surface was given fungicidal treatment using sodium pentachlophenate solution and preserved with repellin super. The work is in progress (pl. CI).

11. RED FORT-COMPLEX, RED FORT, DELHI

During the year under review, the following measures were taken up for chemical preservation of the monuments in Red Fort-complex. The entire marble surface of pillars, *jalis*, central hall in Rang Mahal were chemically treated using dilute solution of ammonia and teepol in the first step, followed by clay-pack treatment in the second step. The surface was thoroughly washed with distilled water.

In Bhadon Pavilion, the marble surface was chemically cleaned with ammonia and teepol solution and clay-pack treatment method. After the surface was thoroughly washed, the ink stains and other scribings were removed with dilute solution of chloromine 'T'.

The sandstone surface in Zafar Mahal was chemically cleaned with liquid ammonia and teepol solution to remove superficial dust and biological growth. To remove salt efflorescence from the lower portion of this structure, caused due to prolonged contact with water, the affected areas were treated with paper pulp. Before commencing the actual chemical treatment, the flaking stones were consolidated. The treated area was given a coat of fungicide and water repellant potassium methyl siliconate solution.

The golden paintings in the central hall of Diwan-i-Khas, were chemically cleaned to remove the deposited accretions besides consolidating the weak and fragile paintings by applying animal glue with the help of tissue paper. The accretions were removed with selective organic solution of polyvinyl acetate in toluene. Minor reintegration was attended to wherever necessary, especially in the areas where the filleting was undertaken.

The painted surface in Hamam was obliterated by the deposition of dust, entering through meticulously designed marble windows on the eastern side. The paintings were also seem to be affected by a very thin layer of lime which was observed during the chemical treatment. The paintings were chemically cleaned with selective organic solvents and the work is in progress.

The portions of Diwan-i-Aam and Naubat Khana were chemically treated with the help of ammonia and teepol solutions. The clay-pack treatment was applied, especially to the marble areas. The calcareous deposits and the bird's excreta marks were removed with dilute glacial acetic acid solution. The entire surface was preserved after fungicidal treatment.

Due to deposition of dust, dirt and bird's excreta, the stone-surface of the elephants at Hathi Gate was

Plate CI



A



B

Delhi, Humayun's Tomb, entrance gate : A, *before and* B, *after chemical treatment.*

treated with ammonia and teepol solution, clay-pack treatment and glacial acetic acid solutions. The surface was finally preserved with wax polish.

The work of chemical treatment of three sides of the rampart wall and two cupolas under flag mast, facing Chandni Chowk, has been taken up with the dilute solutions of ammonia and teepol and preserved with fungicide.

The metallic pinnacles were also chemically treated with rochelle salt with selective and controlled applications. For restoring the metallic lustre, burnishing was done with muslin cloth.

12.TOMB OF MUHAMMAD SHAH LODI, NEW DELHI

The work of chemical treatment and preservation of lime-plastered area of the outer sides and the structures around the dome, were undertaken with the help of dilute solutions of ammonia and teepol, applied gently with cotton swabs. The bleaching powder slurry was also applied to the plastered surface in order to remove the spores of microphytes. The area was given fungicidal treatment with zinc silicofluoride and was preserved with potassium methyl siliconate.

GUJARAT

13. AHMED SHAH'S MOSQUE, AHMEDABAD, DISTRICT AHMEDABAD

The chemical treatment work was executed for removing lime, dust, dirt and micro-biological growths by using different chemicals and solvents. The cleaned stone-surface was given fungicidal treatment with zinc silicofluoride solution followed by preservation with 3% solution of PMMA in toluene. The work of chemical conservation has been completed.

14. JAMI MASJID, DHOLKA, DISTRICT AHMEDABAD

The chemical cleaning of stone-surface was carried out for eradication of biological growth, dust, dirt, bird's excreta and smoke by using dilute aqueous ammonical water mixed with non-ionic detergent. Dilute solution of acetic acid was used for removing lime coatings and bird's excreta marks. The cleaned surface was preserved after fungicidal treatment. The work is in progress.

15. SIKANDAR SHAH'S TOMB, HALOL, DISTRICT GODHRA (PANCHMAHAL)

Superficial accretions such as biological growth, dust, dirt, bird's excreta and shrubs were removed from the stone-surface by using different chemicals. The cleaned surface was given fungicidal treatment followed by preservative coat of 3% PMMA in toluene. The work has been completed.

16. SIVA TEMPLE, KOTAI, BHUJ, DISTRICT KACHCHH

The stone-surface was chemically cleaned for dust, dirt, biological growth and bird's excreta with dilute solution of ammonical water and non-ionic detergent. Finally, the cleaned surface was preserved with preservative solution of PMMA in toluene after it had been treated with fungicidal solution of zinc silicofluoride.

17. JAMI MASJID, PAVAGARH, DISTRICT PANCHMAHAL

The work of chemical treatment has been carried out to remove biological growth, dust, dirt, bird's excreta, etc., by using a mixture of alkaline ammonical water and teepol. The lime deposits were removed with 3% solution of acetic acid. Finally, the cleaned surface was preserved with 3% solution of polymethyl methacrylate in toluene after treating it with fungicide. The work is in progress.

HIMACHAL PRADESH

18. Radha Krishan Temple, Laxmi Narain Temple-Complex, District Chamba

The temple was chemically cleaned by using ammonia solution and non-ionic detergent for the removal of superficial accretions like micro-vegetational growth, dust and dirt. The cleaned surface was fungicidally treated with 2% solution of zinc silicofluoride followed by preservation and consolidation with two coats of 2% polymethyl methacrylate solution in toluene.

19. Ashapuri Temple, District Kangra

The temple was covered with plants, vegetation and layers of dust, dirt and micro-vegetation. After uprooting the plants and vegetation, the work of chemical cleaning was carried out for the removal of superficial deposits by using a mixture of 2% ammonia solution and non-ionic wetting agent (as teepol). The cleaned surface was treated with sodium pentachlorophenate in order to reduce the regrowth of micro-vegetation, etc. Finally, the work of consolidation and preservation was carried out with two coats of 2% polymethyl methacrylate solution in toluene (pls. CII & CIII).

20. Rock-cut Inscription, Kanyara, District Kangra

For eradicating dust, dirt and micro-vegetation from boulders, bearing Brahmi and Kharoshthi inscriptions of first century AD, a mixture of 2% solution of ammonia with non-ionic detergent and teepol was applied. The cleaned stone-surface was fungicidally treated with a 2% solution of sodium pentachlorophenate. Finally, an application of 2% solution of polymethyl methacrylate in toluene was applied for consolidation and preservation of the treated surface.

21. Rock-cut Temple, Masroor, District Kangra

Rock-cut monolithic temple of sandstone was affected by the growth of micro-liverworts, pteriodophytes, leabs, etc., and by the presence of dust, dirt and soot. The outer accretions were removed by chemical cleaning with a mixture of 1 -2% solution of ammonia with non-ionic detergent, teepol followed by thorough washing with water. After removing all accretions, the treated area was subjected to fungicidal treatment with 2% solution of sodium pentachlorophenate in order to check further growth of above elements. Finally, the cleaned surface was preserved and consolidated with 2% solution of polymethyl methacrylate in sulphur free toluene. The work was completed.

JAMMU AND KASHMIR

22. Mahadeva Temple, Basoli, District Kathua

The temple was covered with the growth of plants, trees, moss, lichen, algae, etc., apart from other accretions comprising dust and dirt. After removing the plants and trees manually, the superficial accretions were eradicated with a mixture of 2% solution of ammonia and non-ionic detergent followed by thorough washing with water. The dried surface was given fungicidal treatment with 1 -2% solution of zinc silicofluoride. Finally, it was preserved and consolidated by giving two coats of 2% solution of polymethyl methacrylate in sulphur free toluene.

23. Group of Temples, Kiramchi, District Udhampur

The temple (no.4) was affected by the growth of moss and lichen along with seepage of water, weathering effects, lime deposits and salt effect at many places both inside as well as outside the temple.

Plate CII



Kangra, Ashapuri Temple, parapet-wall : before chemical preservation

Plate CIII



Kangra, Ashapuri Temple, parapet-wall : after chemical preservation

Chemical cleaning was carried out for eradication of superficial accretions by using 2% solution of ammonia and non-ionic detergent. Deposition of lime was removed with 1 -2% solution of glacial acetic acid followed by thorough washing with clean water. The dried area was given fungicidal treatment followed by consolidation and preservation with two coats of 2% solution of polymethyl methacrylate in sulphur free toluene.

The temple (nos.3, 6 and 7) were chemically cleaned of micro-vegetational growth and micro-organism along with salt and lime-plaster at some places. Micro-vegetation and micro-organisms were removed by using a *2%* solution of ammonia and non-ionic detergent. Lime-plaster was detached from the surface of stones by dilute solution of glacial acetic acid followed by a thorough washing with plenty of water. Finally, the cleaned area of temples was consolidated and preserved with two coats of *2%* polymethyl methacrylate in toluene after treating the cleaned surface with fungicidal solution of zinc-silicofluoride.

KARNATAKA

24. DURGA TEMPLE, AIHOLE, DISTRICT BIJAPUR

During the period under review, the remaining area of previous years, 296 m , was taken up for chemical treatment. For eradicating lime splashes, soot and other accretions from the sculptures on the exterior and interior surfaces of the temple, pillars and wall of the Navaranga hall, the chemical cleaning was carried out by using aqueous solution of glacial acetic acid, ammonia and neutral detergent. The cleaned areas were preserved with 1% solution of acrypol P 876 clear pallets in toluene.

25. CAVE (NO. 3), BADAMI, DISTRICT BIJAPUR

In continuation of the previous year's work *(I995-96,p.* 193), the dust, soot and superficial accretions from 721m² area of stone sculptures in Cave 3 were removed by using aqueous solution of ammonia and neutral detergents. The calcareous deposits and lime-wash were removed by using dilute glacial acetic acid solution. Finally, the treated area was preserved in 1 % solution of acrypol P876 in toluene. The total work in Caves 1 and 3 has been completed.

26. VIRUPAKSHA TEMPLE, PATTADAKAL, DISTRICT BIJAPUR

In continuation of the last year's work *(I995-96,p.* 193), the sculptures on the exterior and interior surfaces of the temple, approximately an area of 3040m were chemically treated for eradicating micro-vegetational growth, lime splashes, oily and sooty accretions, bat's excreta etc. by using different chemicals and solvents, such as, neutral detergent, ammonia and glacial acetic acid. The cleaned surface, on the exterior, was given fungicidal treatment with 0.5% sodium pentachlorophenate solution. Finally, it was preserved with 1% solution of acrypol P876 in toluene. A few fragile and broken pieces of architectural carvings were fixed to their original position using epoxy resin. The work is in progress.

27. CHENNAKESAVA TEMPLE, BELUR, DISTRICT HASSAN

In continuation of the preceding year's work *(1995-96,pp.* 193-194), the chemical cleaning of remaining 792m" area was carried out for the removal of oil and soot from the sculptures and carvings on the pillars and ceilings of the Navaranga and Sukanasi in the interior by using neutral detergent and liquor ammonia. Finally, the treated areas were preserved using 1 % acrypol P876. The sculptures were preserved by an application of micro-crystalline wax. The work has been completed.

28. HOYSALESVARA TEMPLE, HALEBID, DISTRICT HASSAN

In continuation of the earlier work (1995-95, p. 194), the chemical cleaning of sculptures in the interior of the shrine was carried out for the removal of calcareous and other ingrained accretions as well as ochre patches in the Navaranga hall, in interior, using glacial acetic acid in water and finally, washing with aqueous solution of ammonia and detergent. The treated area was preserved by using 1% solution of acrypol P876 in toluene. The work has been completed.

29. SCULPTURES IN KEDARESVARA TEMPLE, HALEBID, DISTRICT HASSAN

The micro-vegetational growth on the sculptures was removed by using dilute solution of liquor ammonia and neutral detergent. The treated area was given fungicidal treatment with 0.5% sodium pentachlorophenate solution. Out of 1773 m area, a total 250 m , comprising the east side of star-shaped platform and the temple wall on the exterior was treated. The work is in progress.

30.GOMATESVARA STATUE AND ADJOINING MANTAPAS, SRAVANABELAGOLA, DISTRICT HASSAN.

In continuation of the previous year's work *(1995-96,* p. 194), the bulged-out portions of the statue was consolidated at three locations by injecting ethyl silicate solution into bulges and was allowed to hydrolyse. The bulges were kept under observation and the injecting ethyl silicate solution was repeated till satisfactory results were obtained. The work is in progress in other areas.

31.RANGANATHASVAMY TEMPLE, SRIRANGAPATNA, DISTRICT MANDYA

The chemical cleaning for eradication of oil, soot and thick lime coats was carried out from 2350 m area comprising circumbulatory passage, *mukha-mandapa,* etc. The superficial accretions were removed by using solution of ammonia and neutral detergent. The deposition of lime was removed by dilute glacial acetic acid. Finally, the treated area was preserved with 1% solution of acrypol P876 in toluene. The work is in progress.

KERALA

32.VISHNU TEMPLE, KADAVALLUR, DISTRICT THRISSUR

The chemical cleaning of wood carvings and bracket figures was carried out for removing dust, dirt, soot and muddy accretions by using various organic solvents like toluene, methanol, iso-propyl alcohol, methyl ethyl ketone. The treated surface was given insecticidal solution of flytox (a pyrethrum extract), and finally preserved with 2% solution of polyvinyl acetate in toluene.

33. SIVA TEMPLE, THIRUVANJIKULAM, DISTRICT THRISSUR

In continuation of the earlier *(1995-96,p.* 194) work, the chemical cleaning was carried out for the eradication of dust, dirt, soot and varnish layers from wood carvings and paintings with the help of organic solvents like methanol, diacetone alcohol, morpholene. The cleaned areas were applied with insecticidal solution and finally preserved with 2% polyvinyl acetate in toluene. The work has been completed.

MADHYA PRADESH

34. CHITRAGUPTA TEMPLE, KHAJURAHO, DISTRICT CHHATARPUR

The chemical treatment work was carried out in order to remove moss, lichen, algae, dust, dirt, bird's droppings and lime-wash depositions from the exterior

wall of the temple by applying suitable chemicals. The superficial deposits were removed by using 2-5% dilute solution of ammonia and extran neutral. The lime deposits were removed chemico-mechanically by using 2-5% aqueous solution of acetic acid. The work in the exterior north facing wall, *mandapas* and entrance porch has been completed. The chemical treatment and preservation in the remaining area are under progress.

35. JAVARI TEMPLE, KHAJURAHO, DISTRICT CHHATARPUR

During the period under report, moss, lichen and algae were removed from the surface by using a mixture of ammonia solution (2-5%) and extran neutral. Lime deposits and dirt were removed by using glacial acetic acid. The cleaned area was given fungicidal treatment with zinc-silicofluoride (1 %) and sodium pentachlorophenate (1 %) solutions. The work is in progress.

36. LAKSHMANA TEMPLE, KHAJURAHO, DISTRICT CHHATARPUR

For removing the micro-floral growths and other accretions, 1-5% aqueous solution of ammonia, mixed with a non-ionic detergent, extran neutral have been applied. The cleaned surface was treated with solutions of zinc-silicofluoride (1 %) and sodium pentachlorophenate (1%), followed by preservation with 2% polymethyl methacrylate in toluene. The work is completed.

Consolidation of weathered sandstone sculptures with dilute solution of polyvinyl acetate and polymethyl methacrylate in toluene is in progress. The restoration and filling up of cracks in the sculptures was carried out by applying coarse and fine grained powder of similar sandstone, mixed with an araldite epoxy resin formulations.

37. RAJA BIRSINGH DEO PALACE, DATIA, DISTRICT DATIA

In continuation of the previous year's work *(1995-96,* p. 195), the chemical cleaning of mural paintings on the ceiling, eastern wall, northern and southern walls (right hand side from the entrance of the Maharani 's bed room) on the fourth floor of the palace were subjected to chemical treatment and preservation for the removal of superficial accretionary deposits by using different organic solvent systems.

38. ROCK-CUT CAVES, BAGH, DISTRICT DHAR

In continuation of the previous year's *(1995-96,p.* 195) work, all the seven painted panels of Cave 2 have been provided with the new supports made of fibre glass in epoxy resin, keeping in mind that if the situation demands, the paintings could be reinstated in their original locations. The following procedure was adopted in preparing the multi-layered mounting framework of the paintings: facing down on a flat smooth surface after applying 5-15% polyvinyl acetate solution as consolidant; reducing the plaster layers to pigment layer; application of thin plaster of paris layer as ground and consolidation with polyvinyl acetate; fixing of preshrinked well pressed canvas over plaster of paris layer; fixing of perforated polystyrene sheet with the help of calcium carbonate and fevicol; fixing of polyurethene foam sheet (PUF) with araldite and fixing of aluminium strips over it; over PUF fixing, applied a chopped fibre glass strands mat with araldite resin under suitable pressure for firm adherence and framing of light weight, durable and sturdy panels.

The mending work like grouting and repairing of the cracks, filling of surface gaps and joining of the broken and disintegrated fragments, etc. have been carried out on the relief sculptures in vestibule chamber in Cave 2. The damaged crowns of two *dvarapala* figures on the southern wall were

remodelled with cement and plaster of paris. Besides these, the bulged-out/worn-out portions of the figures of *chauri* bearer and Buddha on the eastern wall were restored with same technique and materials. The superficial blackened depositions were removed with dilute solutions of ammonia and alcohol. The work is in progress.

39. GHAUS MOHAMMAD TOMB, GWALIOR, DISTRICT GWALIOR

In continuation of the last year's work *(1995-96,p.* 196), the chemical treatment and preservation of perforated sandstone screens have been carried out, in the remaining 47% area. The work has been completed.

40. CHATURBHUJ TEMPLE, GWALIOR FORT, DISTRICT GWALIOR

The work of chemical cleaning for the removal of moss, lichen, algae, dust, dirt, bird's droppings, lime, etc., was carried out to this temple. The micro-floral growths and other accretions were eradicated by using 1 -5% ammonia solution, mixed with a non-ionic detergent, extran neutral. The lime depositions were removed with dilute acetic acid solution. The treated surface was given biocide treatment with the solutions of 1 % zinc-silicofluoride and 1 % sodium pentachlorophenate and a very dilute solution of polycide. Finally, it was preserved with 2% polymethyl methacrylate solution in toluene. The work has been completed.

41. JAINA TIRTHANKARAS, GWALIOR FORT, DISTRICT GWALIOR

The chemical cleaning and repair work of the rock-cut relief statues of Jaina Tirthankaras were taken up. Thick micro-biological growth, bird's droppings, whitewash coatings, etc., were removed by using various chemicals and chemico-mechanical methods. Besides, special repairs to some of the badly eroded and damaged figures were also attended to for filling up of the hairline cracks, wide cracks and gaps. A stitching paste containing cementing agent, powdered rock and synthetic adhesive was prepared for this repair work to match the original appearance of the stone used in these sculptures.

42. TELI-KA-MANDIR, GWALIOR FORT, DISTRICT GWALIOR

In continuation of the previous year's *(1993-94,p.* 197) work, thick micro-biological growths, dust, dirt, bird's droppings, lime deposit have been removed. Micro-biological growths and other accretions from the surface of south facing outer facade of the sanctum were removed by using a mixture of 2-5% ammonia solution with non-ionic detergent. The chemically cleaned surface was treated with fungicidal solution of 1% sodium pentachlorophenate and 1% zinc-silicofluoride followed by preservation with 2% polymethyl methacrylate solution in toluene. The work has been completed.

43. TEMPLE 17, SANCHI, DISTRICT RAISEN

For eradicating moss, lichen and algae, present on this fifth century edifice, chemical cleaning was carried out by using a mixture of 2% ammonia solution and a non-ionic neutral detergent, cedepol. The cleaned surface was given fungicidal treatment with 2% zinc-silicofluoride and 2% sodium pentachlorophenate solutions. Finally, the surface was preserved with 2% polymethyl methacrylate in toluene. Besides, the chemical treatment, cracks, crevices and gaps on the exterior sandstone surface were mended by using epoxy resin mixed with fine grained sandstone powder, followed by surface matching with suitable earth colours. The work has been completed.

44. Udaigiri Caves, Udaigiri, District Vidisha

The chemical treatment work was carried out on fourteen shrines, out of a group of nineteen rock-cut caves, for the removal of accretionary deposits of black biological growth, dust, dirt, bird's droppings, sooty matter especially inside the caves. The cave facades, doorways and interior surfaces were cleaned by using a mixture of ammonia solution with cedepol followed by some organic solvents. The cleaned areas were given a fungicidal treatment followed by preservation with 2% solution of polymethyl methacrylate in toluene. Mending and strengthening of hairline cracks in Caves 5 and 13 on the sculptures of Varaha and Vishnu were carried out using synthetic adhesive and filler material and then colour matched. Some of the reliefs and inscriptions which were showing detatchment from the surface, were strengthened with epoxy resin and rock powder paste and the edges were fixed.

MAHARASHTRA

45. Mahadeva Temple, Ghotan, District Ahmednagar

The chemical treatment work was carried out for the removal of micro-vegetational and fungal growths from the exterior portion, using ammonia and teepol solution. The lime and cement marks, etc., from the interior areas were removed with 1% acetic acid solution and soot from *garbhagriha* of this temple was removed using various organic solvents. The cleaned area was subjected to fungicidal treatment, followed by preservation with polymethyl methacrylate in toluene. The work has been completed.

46. Ajanta Caves, Ajanta, District Aurangabad

The temperature and relative humidity in Caves 1, 2, 6, 16, 17 and 21 were recorded regularly thrice a day by using whirling hygrometer. Automatic continuous recording of these two meteorological parameters was also carried out in Caves 1 and 17 with thermohydrograph.

Cave 6 (both the floors), 11 and 22 were subjected to fumigation against insect and pest activity using ethoxide gas (a mixture of 10% ethylene oxide and 90% carbon dioxide). The gas was allowed to remain in the air tight caves for about 36 hours. The caves were found to be free from silver fish, flying insects, cocoons, cockroaches, spiders, bats, rodents, lizards, etc., due to the lethal action of ethoxide gas on these species.

Insecticidal spraying was regularly done fortnightly throughout the year on the paintings in Caves 1, 2, 9, 10, 16, 17 and 19 to arrest and eradicate insect activity by using 2% pyrethrum extract solution in kerosene oil. After every treatment a large number of insect bodies were recovered while dusting which were destroyed during insecticidal spray.

The dust and dirt were being removed regularly from the painted surface and the sculptures in all the caves with different types of soft feather brushes. The floors were cleaned with vaccum cleaner.

The paintings on the west wall, pillars and door-jamb of antichamber and pillar nos. 1,2,3,4 and 5 in Cave 17 were subjected to chemical treatment and preservation for the removal of superficial dust, dirt and thick layers of old varnishes in order to bring originality to the paintings. The proper solvent system with organic solvent based on volatility, dissolving capacity for accretions and corrosiveness were evaluated and applied on the paintings. The paintings were preserved with 1 % solution of polyvinyl acetate in toluene, after complete removal/drying of the solvents used.

The work of consolidation of loose plaster and paintings, filling ofholes, cracks and fixing of bulgings and edges with plaster of paris, mixed with fevicol and/or polyvinyl acetate was carried out in Caves 1, 2, 6 and 17. Finally, colours were matched with a combination of earth colours mixed in appropriate proportion with plaster of paris.

47. Ellora Cave, Ellora, District Aurangabad

The Cave 10 was affected mainly by bat's excreta and calcarious deposits, besides other superficial accretions. Various accretions were removed from the surface with dilute solution of ammonia mixed with teepol while calcareous matter was removed with 5-10% solution of calgon. The mixture of ammonium bicarbonate and sodium bicarbonate solution followed by 2% aqueous solution of EDTA was used for removal of stains of bat's excreta. Finally, the treated surface was preserved with 2% solution of polymethyl methacrylate in toluene.

The mesh of the door was repaired as well as the openings were pluged and fitted with hydraulic hinges to protect the reentry of bats in the cave. The work has been completed.

In Cave 12, the work of consolidation, fixing and restoration of painted plaster was carried out wherever it was found to be necessary to arrest further decay/damage. The work has been completed.

48. Kopeshvara Mahadeo Temple, Khidrapur, District Kolhapur

Thick layers of cemented dust, lime marks, soot and bird's excreta were eliminated from the interior side of the temple by using different chemicals. Finally, it was preserved with 1-2% solution of polymethyl methacrylate. 98% work has been completed during the year under review.

ORISSA

49. Muktesvara Temple, District Bhubaneswar.

The chemical cleaning was carried out for eradicating thick micro-vegetational growth and other accretions with 2% solution of ammonium hydroxide with non-ionic detergent, teepol. Lime deposits were removed with dilute acetic acid solution. The treated surface was given fungicidal treatment with 2% solution of sodium pentachlorophenate, followed by preservation with two coats of 1.5% polymethyl methacrylate in toluene. The work has been completed.

50. Parvati Temple, Lengaraja Temple-Complex, Bhubaneswar, District Bhubaneswar

The chemical cleaning was carried out for eradication of micro-vegetational growth by using 2% solution of ammonia with non-ionic detergent and the black accretions were removed with dilute oxalic acid. The cleaned surface was treated with 2% aqueous solution of zinc-silicofluoride. It was then preserved with two component systems of preservative by using aqueous solution of potassium methyl siliconate followed by final coat of 1.5% polymethyl methacrylate solution. The work is in progress.

51. Sun Temple, Konarak, District Bhubaneswar

The chemical cleaning of the area covering the joints of *jagamohana*-Vimana portions to the Surya image in the west was taken up to remove thick micro-vegetational growth with 2% solution of ammonia mixed with non-ionic detergent. It was then treated with zinc-silicofluoride solution. Finally, the preservation of the treated area was carried out with two coats of 1.5% solution of polymethyl methacrylate in toluene. The work in the remaining area is in progress.

52. SINGHANATHA TEMPLE, GOPINATHAPURA, DISTRICT CUTTACK

For eradicating micro-vegetational growth and jet black accretions, 2% solution of ammonia with non-ionic detergent was used. The cleaned surface was treated with 2% aqueous solution of zinc silicofluoride followed by two coats of 1.5% polymethyl methacrylate solution in toluene as preservative. The chemical treatment was also attended to on its subsidiary temple 'Baidesvara' in the same complex. The work has been completed.

53. RATNAGIRI MONASTERY, DISTRICT JAJPUR

The chemical treatment of loose stupas, small sculptures and door-jamb of the monastery was carried out for the removal of lichen, moss, dust, dirt and black accretions. These accretions were removed by using 2% ammonia solution with non-ionic detergent. The black accretions were taken out with the help of dilute oxalic acid solution.

The periphery wall and big stupas of the monastery were also subjected to chemical treatment for removing micro-vegetation and other superficial accretions by using a mixture of 2% ammonia solution with non-ionic detergent, teepol.

The cleaned areas were treated to check further growth of micro-vegetation, with sodium pentachlorophenate solution. Finally, the treated area was preserved with polymehtyl methacrylate solution in toluene, except on the door-jamb. The work is in progress.

54. LORD JAGANNATHA TEMPLE, PIRI, DISTRICT PIRI

The chemical cleaning was carried out for eradicating micro-vegetational growth from the north and the east sides of Vimana by using 2% solution of ammonia mixed with non-ionic detergent. The lime deposits were removed from *beki, khapuri* and *amla* by chemico-mechanical method using 2% acetic acid solution. The fungicidal treatment was given over the chemically cleaned surface with 2% sodium pentachlorophenate solution and the preservation work was carried out with 3% aqueous solution of potassium methyl siliconate. Almost 98% work has been completed.

RAJASTHAN

55. GHATESHVARA MAHADEVA TEMPLE, BADOLI, DISTRICT CHITTAURGARH

The exterior south-west face of the temple was chemically treated to remove micro-vegetational growth, dust, dirt and lime-wash. The superficial accretions were removed by using 3-5% ammonia solution and the lime coat was eradicated by using 2% acetic acid solution. The cleaned stone-surface was treated with santobrite solution followed by preservation with 2% polymethyl methacrylate solution in toluene. The work is in progress.

56. SRINAGAR CHAURI TEMPLE, BADOLI, DISTRICT CHITTAURGARH

Thick layers ofbiological accretions were removed from the temple with 3% ammonia solution mixed with non-ionic detergent. Lime coating was eradicated by using dilute solution of acetic acid. About 840 m^2 (51 %) work has been completed during the year.

57. TRIMURTI SIVA TEMPLE, BADOLI, DISTRICT CHITTAURGARH

For the removal of dried moss and lichen, work was carried out by using 3-5% solution of ammonia. Lime-wash coating was eradicated by 2% aqueous acetic acid. The cleaned surface was treated with 2% sodium pentachlorophenate solution. Finally, it was preserved with 2% solution

of polymethyl methacrylate in toluene. The work has been completed.

58. Saat Bees Deori, Jaina Group of Temples, Chittaurgarh, District Chittaurgarh

The work of chemical treatment was carried out to stone sculptures and carvings of Adinatha Temple for removing various superficial accretions. Thick biological growth, dust and dirt were eliminated by using 3-5% solution of ammonia mixed with liquid detergent. Lime coating was removed with 1-2% solution of acetic acid. The cleaned surface was given fungicidal treatment with sentobrite solution followed by a coating with 2% solution of polymethyl methacrylate in toluene. The work has been completed.

For the eradication of moss and lichen, a 3% solution of ammonia mixed with rankline was used. Lime-wash was removed using very dilute solution of acetic acid and the surface was flushed with water to remove the chemicals. The chemically treated dried surface was given 2-3% fungicidal solution of sodium pentachlorophenate. It was given a preservative coat of polymethyl methacrylate in toluene. The work has been completed.

59. Kumbha-Shyama Temple, Chittaurgarh, District Chittaurgarh

The chemical treatment on various structures of this temple was carried out for removing various accretions using different chemicals. The dried moss, lichen, dust, dirt and other accretions were removed using 2-3% solution mixed with non-ionic detergent, teepol. Thick lime coatings were removed with 2% solution of acetic acid and washed thoroughly. The dried surface was given fungicidal treatment with 2% sodium pentachlorophenate. Finally, the surface was preserved with polymethyl methacrylate in toluene. The chemical treatment and preservation work have been completed during the year on the exterior wall facing north-east, about 100 m^2 on the wall facing south-west and about 175 m on small temple on north side and Garuda temple in the same complex. The work on the remaining area is in progress.

60. Jagat-shiromani Temple, Amber, District Jaipur

The work of chemical cleaning was carried out on the north-east and the south face of main *sikhara* of the temple for removing lime-wash, dust, dirt and biological growth. The superficial accretions of biological growth, dust and dirt were removed with 3% ammonical water. The stratified deposition of lime-wash was softened with 2-3% solution of acetic acid and was removed by chemico-mechanical methods. The cleaned stone-surface having intricate carvings were given fungicidal treatment with 2% aqueous solution of sodium pentachlorophenate. Finally, it was preserved with 2% polymethyl methacrylate in toluene. The work has been completed.

TAMIL NADU

61. Kailasanatha Temple, Kanchipuram, District Chennai-M.G.R.

The main Vimana of the temple was chemically cleaned for the removal of vegetational growth using aqueous solution of ammonium hydroxide and teepol 2-3% each in 3:1 ratio. After applying a fungicidal coat of 1.5% sodium pentachlorophenate solution, on the completely dried surface, it was preserved with 3% solutionofpolymethyl methacrylate in toluene. The work has been completed covering an area of about 425 m .

62. Shore Temple, Mahabalipuram, District Chennai-M.G.R

The chemical cleaning and extraction of soluble salts were carried out from the interior of

southern half and both sides of northern half of *prakara-wall* of this temple. The vegetational growth, dust and dirt were removed with solution of ammonia and teepol. The entire area was subjected to extraction of soluble salts by paper pulp method. Paper pulp application was repeated till it was found free from salts tested for chloride and sulphate, thereby confirming the treated area free from these salts. The cleaned salt free dried area was treated with 1.5% solution of sodium pentachlorophenate as fungicide followed by preservation with 3% polymethyl methacrylate in toluene. The work has been completed covering an area of about 340m during the year.

63. ARJUNA'S PENANCE AND OTHER GROUP OF MONUMENTS, MAHABALIPURAM, DISTRICT CHENAAI M.G.R.

The work of chemical cleaning was carried out to Arjuna's penance, Ganesa Ratha, Varaha, Ramanuja *mantapa* and Mahishasuramardini Cave for eradication of vegetational growth by using dilute (2-3%) solution of ammonia and teepol each in the ratio of 3:1. After treating the cleaned dried surface with 1.5% aqueous sodium pentachlorophenate, it was preserved with 3% polymehtyl methacrylate in toluene.

64. JALAKANTESVARA TEMPLE, VELLORE, DISTRICT NORTH ARCOT

The chemical cleaning was done to the sculptures in the Kalyana *mandapa* of the temple for eradication of dust, dirt, soot, oily and greasy accretions using ammonia and teepol solutions, 2-3% each, in the ratio of 3:1. Besides, removal of brownish patches was performed with 5% oxalic acid solution. Finally, the entire area was preserved with 3% polymethyl methacrylate in toluene.

65. ROCK-CUT JAINA TEMPLES, SITTANAVASAL, DISTRICT PUDUKKOTTAI

The mural paintings in the cave temple were chemically cleaned with toluene, triethanolamine, diacetone alcohol, butyl lactate and turpentine oil for the removal of old, darkened preservatives, oily and greasy accretions etc. The unpainted areas and the floor were given insecticidal treatment to protect the insect activities in the caves. On the chemically treated painted surface, a preservative coat of 1.5% polyviny 1 acetate in toluene was applied. The work has been completed.

66. ROCK-CUT VISHNU TEMPLE, THIRUMAYAM, DISTRICT PUDUKKOTTAI

For eradication of multi-layered lime-wash from the pillars, walls, ceilings and sculptures of the temple by chemico-mechanical methods, a 10% acetic acid solution has been used. The surface was thoroughly washed with water to remove the chemicals used and was allowed to dry. The dried, cleaned surface was preserved with 2% polymethyl methacrylate in toluene.

67. AMMAN SHRINE, SRI NARASIMHASVAMY TEMPLE, NAMMAKKAL, DISTRICT SALEM

About 163m² area comprising walls, pillars and ceiling of the interior of Amman Shrine was chemically cleaned for the oily and sooty accretions and lime-wash. Superficial accretions were removed with solutions of ammonia and teepol in 2-3% concentrations. Lime-wash was eradicated by dilute glacial acetic acid. Finally, the surface was thoroughly washed and allowed to dry. The cleaned area was preserved with 3% polymethyl methacrylate in toluene.

68. BRIHADISVARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR

The paintings in circumbulatory chambers of the main shrine of the temple were chemically treated for

removing dust, dirt, cobwebs, soots and greasy accretions by using different chemicals such as triethanolamine, diacetone alcohol, butyl lactate, toluene and turpentine oil. Finally, a preservative coat of 1.5% polyvinyl acetate in toluene was applied.

The thick vegetational growth was eradicated from pillars in corridor, museum, etc., of the temple by using aqueous solution of ammonia and teepol. The cleaned area was subjected to fungicidal treatment with 2% solution of sodium pentachlorophenate. Finally, it was preserved with 3% polymeythyl methacrylate in toluene.

The vegetational growth, mostly moss was removed from the compound wall (interior) all around the temple by chemical cleaning, with ammonia and teepol solutions. The cleaned surface was subjected to fungicidal treatment with 1.5% sodium pentachlorophenate followed by preservation with 3% polymethyl methacrylate in toluene.

69. AIRAVATESVARA TEMPLE, DARASURAM, DISTRICT THANJAVUR

The chemical cleaning of Vimana, adjacent walls, *mandapa* and *gopuram* was carried out for the removal of vegetational growth and other accretions by using ammonia and teepol solutions. After the surface is thoroughly washed and dried, the cleaned surface was treated with 1.5% sodium pentachlorophenate solution. It was preserved with 3% polymethyl methacrylate in toluene.

UTTAR PRADESH

70. AGRA FORT, AGRA, DISTRICT AGRA

The chemical cleaning of paintings in the exterior of Khas Mahal, rear portion and golden pavilion on either side, was carried out by using suitable mild organic solvents and their mixtures. The used chemicals were dried completely. Finally, the paintings were preserved with 1% solution of polyvinyl acetate in toluene.

The incrustations and stains were removed from the marble by using paste of bentonite and clay-pack method and washed with distilled water. The metallic surface was cleaned with dilute solution of sodium-potassium tartrate and washed thoroughly till it was found free from salt incrustations. The dried surface ofboth metallic and marble was buffed with soft muslin cloth to restore the lustre (pl. CIV).

71. GROUP OF MONUMENTS, FATEHPUR SIKRI, DISTRICT AGRA

The deposition of dust, dirt, moss and lichen in Birbal's Palace was chemically removed from the exterior stone-surface of this complex by a mixture of 2-3% ammonia solution and teepol. The cleaned surface was given fungicidal treatment with 2-3% aqueous solution of sodium pentachlorophenate, followed by preservation with two coats of polymethyl .methacrylate in toluene. This work is in progress.

The entire stone-surface, plastered wall and *burjees* of Jodha Bai Palace (interior) were cleaned for the removal of thick layers of moss, lichen and algae apart from dust, dirt and particulate matter with the help of ammonia and teepol in water. The fungicidal treatment with 2% aqueous solution of sodium pentachlorophenate followed by preservation with two coats of 2% solution of polymethyl methacrylate in toluene was given. The work has been completed.

The chemical cleaning was carried out on the entire stone-surface of Maryam's Palace, plastered wall and roof of Hammam for the removal of moss, lichen and other microphytes apart from dust and dirt by using 2% to 3% solution of ammonia and teepol. The treated area was given fungicidal treatment with

Plate CIV



A



B

Agra, Khas Mahal, Red Fort, exterior wall : A, before and; B, after chemical treatment and preservation

2% aqueous solution of sodium pentachlorophenate. Finally, the surface was preserved with 2% solution of polymethyl methacrylate in toluene. The work has been completed.

72. ITMAD-UD-DAULA, AGRA, DISTRICT AGRA

The chemical treatment work was carried out to the paintings of eastern verandah of Itmad-ud-Daula, which had turned yellowish. For the removal of dust, dirt, soot and other superficial accretions, a mixture of mild organic solvents was used. Finally, the paintings were preserved with 2% solution of polymethyl acetate in toluene.

The metallic surface in the eastern verandah was cleaned by the application of a paste of fuller's earth followed by cleaning with a mixture of dilute solution of ammonia and teepol. The work has been completed.

73. TAJ MAHAL, AGRA,DISTRICT AGRA

The chemical treatment was carried out on the marble surface of the domes of the *burjees,* which were turned yellowish brown, to remove deposits of dust, dirt, moss, lichen, etc., by applying a paste of fuller's earth, followed by cleaning with a mixture of ammonia and teepol solution. The red sandstone of *burjee* was cleaned by removing the micro-vegetational growth, dust and dirt with the help of a mixture of 2-3% solution of ammonia and teepol. The cleaned surface was subjected to fungicidal treatment followed by preservation with polymethyl methacrylate in toluene. The work is in progress.

The marble panels in the dome of the main entrance of Taj Mahal were affected by suspended particulate matter, soot, smoke, dust, dirt, and bird's excreta apart from the deposits of greasy matters embodied with insoluble salts. The marble surface was cleaned by using mild solvent and their mixtures in the first phase and a pack of fuller's earth in the second. In the third step, the surface was washed thoroughly with distilled water and the pristine lustre was restored by mild rubbing with muslin cloth.

The red sandstone wall of the Taj-complex facing the River Yamuna was chemically cleaned for the removal of vegetational growth along with SPM and other superficial accretions by using 2-3% ammonia and teepol in water. The cleaned area was subjected to fungicidal treatment with 3% aqueous solution of sodium pentachlorophenate. Finally, it was preserved with two coats of 2% polymethyl methacrylate in toluene. The work has been completed.

The superficial accretions such as moss, lichen, algae, microphytes, etc., were removed chemically from the exterior walls of the main entrance of Taj Mahal by a mixture of 2-3% aqueous ammonia solution and teepol. Thereafter, it was given fungicidal treatment with 2-3% aqueous solution of sodium pentachlorophenate followed by preservation with two coats of 2% polymethyl methacrylate in toluene. The work has been completed.

74. TOMB OF SULTAN KHUSHRU'S MOTHER, ALLAHABAD, DISTRICT ALLAHABAD

The entire red sandstone surface of the tomb was subjected to chemical treatment for the removal of thick deposits of micro-vegetational growth, dust and dirt by using a mixture of liquid ammonia and teepol in water. Afterwards, the cleaned surface was given fungicidal treatment followed by preservation with polymethyl methacrylate in toluene. The work is in progress.

75. TEMPLES OF MANIYAN RATAN DEO AND BAN DEO, DWARAHAT, DISTRICT ALMORA

Superficial accretions such as moss, lichen, algae, dust, dirt, etc., were removed from the stone

surface of these temples using mixture of ammonia and teepol in water. Thereafter, the cleaned surface was subjected to fungicidal treatment with 2% aqueous solution of sodium pentachlorophenate. The preservation of the chemically treated area was carried out with 2% solution of ploymethyl methacrylate in toluene. The work has been completed.

76. MONASTERIES, KUSHINAGAR, DISTRICT PADRAUNA

For removing the superficial accretions from the total area of the two complexes (nos. 2 and 3), a 5% aqueous solution of ammonia with liquid detergent was used. The cleaned area was treated with 5% sodium pentachlorophenate and 3% aqueous solution of acrylic emulsion. Finally, it was preserved with 2% polymethyl methacrylate in toluene. The work of chemical conservation and preservation in both the complexes has been completed.

77. EXCAVATED SITE, SARNATH, DISTRICT VARANASI

The entire area around the votive stupas, situated on the right side, including the extension was chemically treated for the removal of thick layers of vegetational growth using 5% solution of ammonia and non-ionic detergent. The fungicidal treatment, the consolidation and the preservation work are in progress.

WEST BENGAL

78. RAS MANCHA, BISHNUPUR, DISTRICT BANKURA

The thick growth of microphytes was removed by using 5% ammonia solution and non-ionic detergent After cleaning, it was subjected to 3% acrylic emulsion and 5% fungicidal solution to reduce the capillary action and regrowth of microphytes. Finally, it was preserved with 2% polymethyl methacrylate in toluene. The work has been completed.

79. GOPALJI TEMPLE, KALNA, DISTRICT BARDHAMAN

The thick growth of vegetation was eradicated by 5% ammonia solution and non-ionic detergent. The cleaned surface was subjected to treatment with 3% acrylic emulsion and 5% santobrite solution, followed by preservation with 2% polymethyl methacrylate in toluene in order to provide protection against ingress of moisture through capillary action and regrowth of micro-biological species.

TREATMENT AND PRESERVATION OF EXCAVATED AND MUSEUM EXHIBITS[1]

1. A number of limestone sculptures of Ikshvaku period in the Archaeological Museum, Amaravati, were chemically treated with the help of sponge swabs, using ammonia-teepol dilute solutions. After the chemical treatment, the sculptures were allowed to dry and then consolidated by the solution ofbarium hydroxide-urea-glycerine, through a number of repeated cycles. The fungicidal treatment was given with naphthalene and the preservation was carried out with 2% acrypol solution in toluene.

2. Limestone sculptures in the Archaeological Museum, Nagarjunakonda, were chemically treated for the removal of dust, dirt and other accretions with ammonia-teepol solution (3:1) using sponge swabs and coated with barium hydroxide, urea and glycerine mixture in water. The cleaned surface was given insecticidal treatment with naphthalene in toluene followed by preservative coat of 2% acrypol in toluene. The work has been completed.

[1] Information from: 1-9, The Director (Science) of the Survey, Dehradun and 10, The Director of Archaeology and Museums, Government of Andhra Pradesh, Hyderabad.

3. Nine wooden panel paintings from the Archaeological Museum, Velha Goa, Goa, were treated chemically with the mixture of organic solvent for removing the old darkened varnish and other accretions. Finally, the panels were preserved with thin coat of varnish as a protective coat.

In addition, a number of stone sculptures from the museum, covered with cemented dust on old preservative and lime marks, were chemically treated with 1 -2 % solution of ammonia, mixed with teepol and 1-2 % acetic acid. These sculptures were preserved with 2% solution of polymethyl methacrylate in toluene.

4. Two daggers and one sword received from the Archaeological Museum, Srirangapatna, were chemically treated for the removal of rust and were finally preserved. Besides, seven gold coins were also chemically treated with 2% aqueous solution of neutral detergent for the removal of siliceous/ muddy incrustations and washed thoroughly. As preservative 1% solution of polyvinyl acetate in toluene was used.

5. Ten palm-leaf manuscripts, received from the Chennai Circle of the Survey, Chennai, were being treated for the removal of superficial accretions and filling of the holes.

6. One hundred eighty antiquities received from Hampi excavation through the Superintending Archaeologist, Bangalore Circle of the Survey, Bangalore, were subjected to chemical treatment. The antiquities were preserved with wax.

7. One hundred and twenty-one copper and lead coins, received from the excavations at Banavasi and Sannati were chemically preserved. The copper coins from Banavasi were treated by using 10% alkaline rochelle salt solution, followed by treatment with 10% sulphuric acid and thorough washing. The lead coins were also treated with amberlite resin in distilled water medium for the removal of basic carbonates. 1% solution of polyvinyl acetate in toluene was used as preservative in both the cases.

8. Two hundred and thirty-two art objects were subjected to chemical treatment for the eradication of dust, dirt, oily stains, lime and other accretions by different chemicals. The cleaned objects were given fungicidal treatment with l%zinc-silicofluorideand 1% sodium pentachlorophenate solution, followed by preservation with 2% polymethyl methacrylate in toluene.

9. A holy Quran (M.5-40.189, Ace. no.232) from the Mumtaz Mahal Museum, Red Fort, Delhi, mutilated as a result of insect activity and acidification, was subjected to chemical conservation and preservation. The painted monograms on the pages, especially where green colour was used with 'Verdigris' as pigment, attained maximum acidity and the back portion of the papers were observed as if it is charred. The Quran was deacidified, fumigated and the pages were separated from each other. The damaged pages were encapsulated in the laminar layer of cellulose acetate and Nepalese tissue paper in order to provide them sufficient strength. About four hundred and fifty pages, out of nine hundred, were chemically treated and preserved. The work is in progress. Another Quran (Ace.no.20) was deacidified to reduce its acidity absorbed in the pages and fumigated to arrest insect acitivities. The sheets were separated under mild humid conditions one by one for proper chemical treatment and preservation. The work is in progress.

10. The Department of Archaeology and Museums, Government of Andhra Pradesh, Hyderabad, undertook the work of chemical cleaning of five hundred lead coins, received through treasure trove, four copper antennae swords, two hundred and sixty-nine palm-leaf manuscripts from Kakinada besides some excavated antiquities, during the year under review.

RESEARCH AND ANALYSIS

1. For aerometric surveillance and to earmark air pollution level in the surrounding atmosphere of the two monuments at Agra *viz.*, Taj Mahal and Sikandara, the following parameters were measured.

(a) The measurement of sulphur dioxide and oxide of nitrogen gases were recorded on weekly pattern with Higher Volume Air Sampling method. The annual average concentration of SO^2 during the year under review was observed 16.0 ug/m^3 and Nox 11.0 ug/m^3 and 7.0 ug/m^3 at Taj Mahal and Sikandara, AAQMS respectively.

2. Particulate matter, which acts as a carrier for gaseous pollution by way of absorbing acidic droplets, was measured in two stages.

(a) Suspended particulate matter was monitored at Taj Mahal and Sikandara, Agra, with High Volume Air Sampler HVS-451 Envirotech India Co. instrument on twenty-four hourly basis. The annual average concentration of SPM was measured to be 224.0 ug/m and 178 ug/m at Taj Mahal and Sikandara respectively.

(b)The dust-fall measurement was recorded for the dust-falls, down with the influence of gravitational force and measured to be 9.0,15.0 and 12.0 metric tonnes per sq km per month respectively at Taj Mahal, Red Fort and Sikandara, Agra.

(c) Measurement of meteorological parameters-the diurnal variation in temperature and relative humidity were recorded throughout the year at Taj Mahal, Agra, along with the measurement of wind direction and wind speed. On an average, the maximum component of winds was observed from north-west direction with 6.0 km/hrs.

3. In the ambient air surrounding Red Fort, Delhi, the measurement of dust-fall rate and suspended particulate matter was recorded during the year under review. The dust-fall rate was monitored in MT/Km /Month and the concentration of suspended particulate matter was noted as ug/m of air.

4. During the period under review, a few instruments were procured to study the meteorological parameters at the hillock where Gomatesvara statue stands as also to study their effect on the statue, especially the diurnal variation in the meteorological parameters.

5. Some estampages from the Epigraphy Branch of the Survey, Mysore, were chemically treated this year for deacidification using alcoholic barium hydroxide method. The tears were mended and the edges strengthened by strip lining. Finally, these were preserved with l% polyvinyl acetate in toluene, rolled and kept in plastic capsules.

6. Nine stone samples at different weathering stages from Shore Temple, Mahabalipuram (Tamil Nadu), were analysed for their constituents to assess the variation in the composition of minerals.

[1] Information from: 1 -17, The Director (Science) of the Survey, Dehradun and 18, National Physical Research Institute, Hyderabad.

7. A number of stone samples from Rani-ki-Vav, Patan (Gujarat), were analysed for their chemical and mineralogical composition in order to evaluate the oolithic textured accretionary deposits on the sculptures developed in the new environment experienced after excavation.

8. Glazes from Chini-ka-Rauza and Gwalior Fort, Gwalior (Madhya Pradesh), were analysed for different colours to evaluate the ancient technique of preparing the coloured glazes.

9. Two samples of iron from iron pillar at Dhar (Madhya Pradesh), were analysed for their chemical and metallographic studies in order to evaluate their composite anti-corrosive behavior.

10. One lime-plaster sample from Tughluqabad Fort, Delhi, was analysed for its chemical constituent to evaluate the possibility of its effective conservation.

11. Extract of teak leaves *(Tectona grandis)* was studied to explore the possibility of its use as pigment in ancient times.

12. The evaluation of the effectiveness of modern water based preservatives especially on terracottas, as compared to organic polymers as preservatives, is being investigated. In these studies, the different properties of preservatives at different faces (inside and outside) are to be evaluated with the help of modern instrumental methods of analysis. The studies are in progress.

13. Conservation of lime-plaster may not find requisite usefulness with the methods used in chemical conservation of stone material. Keeping this in mind, the studies are initiated for evaluating better methods for chemical conservation of lime-plaster besides its consolidation/restoration with compatible material. The studies are in progress.

14. The effectiveness of various corrosion inhibitors are being studied. If the iron samples are buried under different acidic/basic soil environment for a longer time, a desired environment can be created for the iron objects for experimental work.

15. The changing perception of the climate in Ladakh region (some time snowfall is being experienced) causes problems to the mud-structure of the region, especially the monasteries. Keeping this problem in mind, the laboratory studies are initiated to modify the mud adobe for mud blocks preparation in order to make them resistant by addition of some compatible additives.

16. In continuation of the previous year, the development of lustre on the marble with the help of stable polishing sheen and the metasomatic action of ammonium oxalate on the exposed marble surface were investigated. The presence of ammonium oxalate may be due to the biological decay, water treatment besides industrial and natural activities.

17. Critical evaluation of restoration of losses and reintegration of disarrayed paintings in adobe structures were initiated in the laboratory by preparing a number of replicas. The different possible approaches for reintegration of disarrayed mural paintings having wide cracks and distorted anatomical proportions were placed in photo exhibition for public comments and opinions to evolve universally accepted reintegration approach.

18. A prelminary investigation was carried out by the Scientists of National Physical Research Institute (NGRI), Hyderabad, with the permission of the Survey, to know the effect of vibration on Charminar, Andhra Pradesh, due to vehicular traffic. It was observed that the vibration as measured is well within the limits and further study might reveal some conclusive evidence in the matter.

XI. ARCHAEOLOGICAL GARDENS[1]

ANDHRA PRADESH

1.MONUMENTS AT ANUPA, DISTRICT GUNTUR

The arrangements were made to develop a garden around the monuments by augmenting the supply of water.

2.ARCHAEOLOGICAL MUSEUM, AMARAVATI, DISTRICT GUNTUR

A bore-well has been installed for developing a garden around the museum.

3.CHIRCH OF BOM JESUS, VELHA GOA

The lawns in the Church-complex have been returfed.

KARNATAKA

4.DIRGA TEMPLE-COMPLEX, AIHOLE, DISTRICT BAGALKOT

The work of garden development has been completed.

5.HAMPI-COMPLEX, DISTRICT BELLARY

During the year under review, augmentation of irrigation in the complex has been taken up besides making arrangements to lift water from the Akka Tangi Gund Wate wear, through the Karnataka Land Army Corporation limited.

6. GOLGUMBAD, BIJAPUR,DISTRICT BIJAPUR

The lawns in the complex have been returfed.

7. MALLIKARJUNA TEMPLE-COMPLEX, PATTADAKAL, DISTRICT BIJAPUR

The area adjoining the temple has been provided with a garden.

8. TOMB OF IBRAHIM RAUZA, BIJAPUR, DISTRICT BIJAPUR

The lawns of the tomb-complex have been returfed

MADHYA PRADESH

9.ARCHAEOLOGICAL MUSEUM, SINGHPUR PALACE, CHANDERI

A garden with plants and aromatic flowers has been laid in and around the museum-complex.

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[1]Information from: The Chief Horticulturist, Horticulture Branch of the Survey, Agra. Of the hundred and forty-six gardens under its control, the Garden Branch of the Survey maintained and developed twenty-eight gardens during the period under review.

MAHARASHTRA

10. CAVES AT ELLORA, DISTRICT AURANGABAD

The area in front of the caves has been taken up for landscaping.

11. SHANIWARWADA FORT, DISTRICT PUNE

The lawns in the fort-complex have been returfed.

12. BRIHADISVARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR

The area north of the temple has been developed into a garden.

UTTAR PRADESH

13. AKBAR'S TOMB, SIKANDARA, DISTRICT AGRA

The development of garden in the outer-complex of the tomb has been initiated.

14. MEHTAB BAGH, TAJ MAHAL, DISTRICT AGRA

A project report has been prepared in collaboration with the Agra Circle of the Survey. For complete revival of the garden in the Mehtab Bagh area on Charbagh pattern for which action has been initiated to select the flora for plantation besides preparing the layout of the garden, based on various historical records and plans. The garden in the inner complex of Taj Mahal has been returfed.

WEST BENGAL

14. KATRA MOSQUE, MURSHIDABAD, DISTRICT MURSHIDABAD

The work of developing a garden around the mosque has been completed.

XII. PUBLICATIONS

PUBLICATIONS OF THE SURVEY 1.

1. INDIAN ARCHAEOLOGY- A REVIEW

The issue for the year *1991-92* has been brought out while three previous issues *(1958-59; 1959-60* and *1960-61)* have been reprinted.

2. MEMOIRS OF THE ARCHAEOLOGICAL SURVEY OF INDIA

Two issues, *No. 94,* "Excavations at Piprahwa and Ganwaria" by K.M. Srivastava and *No. 95,* Excavations at "Tuljapur Garhi (1984-85)" by B.P. Bopardikar, have been brought out during the year under review.

3. NEW IMPERIAL SERIES

Three issues under this series have been reprinted. These are: *Bijapur and its Architectural Remains with an Historical Outline of the Adil Shahi Dynasty* and *The Chalukyan Architecture of the Kanarese Districts* by Henry Cousens; *The Buddhist Stupas of Amaravati and Jaggayyapeta in the Krishna District, Madras Presidency, Surveyed in 1982* by Jas Burgess.

4. GUIDE BOOKS

Guide to Mattancherry Palace was brought out besides reprints of the three guide books *viz.,* Khajuraho, Bhubaneswar (English) and Bishnupur Hindi).

5. SPECIAL PUBLICATIONS

Three publications *viz., Ajanta Murals* by A Ghosh; *The Story of Indian Archaeology 1784-1947* by S.N. Roy and *Archaeological Remains Monuments and Museums* (in two parts) have been reprinted.

6. ANNUAL REPORT ON INDIAN EPIGRAPHY

The issue for the year *1984-85* has been published during the year.

OTHER PUBLICATIONS

7. KARNATAKA

The Directorate of Archaeology and Museums, Goverment of Kamataka,Mysore,brought out the followmg pubhcations during the year under review These are: *Inscriptions of Bellary District; Vijyanagarada Shasanagalu* (Kannada); *Inscriptions of Vijayanagara; Vijayanagara* (Seminar papers-1995); Art and Architecture in Karnataka (Seminar papers); *Epigraphy, Numismatics and other aspects from Vijayanagara - Progress of Research 1988-91;. Karnataka (Seminar papers); The Mysore Palace—A Visitor's Guide; Excavations at Talakad; Dharanath Temple-Dhareshwara; History of the Wodeyars of Mysore; Heggadehalli—A report on Megalithic Excavations, 1995; Nagachandrika; Kadambas—Their History and Culture (Seminar paper);The*

Cult of Vishnu in Karnataka; Interim report on the excavation at Sannathi; Vijayanagara Temples in Karnataka and Sangeeta Kalege Mysore Wodeyara Protsaha- Koduge.

8. SALAR JUNG MUSEUM, HYDERABAD

On the eve of Museum Formation day (16th December, 1996), the following publications were released *viz.*, three issues of the *Bi-Annual Research Journal* and *Hindi and Urdu Supplement; Monographs on Pahari Miniature in the Salar Jung Museum* by D.Bhaskara Rao; *A Concise Descriptive Cataloge of the Persian Manuscripts in the Salar Jung Museum and Library* by (late) Moulana-Al-Haj Muhammad Ashraf; two illustrated brochures on the special Exhibition on Contemporary paintings in the Salar Jung Museum and the publications of the museum.

ARCHAEOLOGICAL SURVEY OF INDIA